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Colonial Veterinary Scholarships.

1.—It was decided in November, 1929, that a certain number of post-graduate scholarships in Veterinary Science should be offered annually, with a view to the creation of a pool of qualified candidates from which vacancies in the Colonial Veterinary Departments could be filled. It is intended that up to ten scholarships should be available annually, at any rate during the years 1930 to 1938 inclusive, which will be regarded as an experimental period. The question of the continuance of the scheme will be examined in 1937. Due notice will be given should it be decided not to continue the scheme or to introduce important modifications into it. The scholarships are designed both to attract to veterinary science men who have already been trained in general science at a University and have shown a bent for scientific work, and to encourage men who have already embarked on a veterinary training, and have shown aptitude for the work, to develop further the scientific side of their education.

2.—The scholarships will not carry with them any guarantee that the holders will subsequently receive appointments in the Colonial Services, as the number of vacancies in the Colonial Veterinary Departments necessarily varies from year to year. It is expected, however, that scholars will usually be offered such appointments on the conclusion of their training, provided that their work and conduct have been satisfactory; and it is intended that from 1932 onwards vacant Colonial appointments should be filled as far as possible by the selection of scholars with whose progress and suitability the Secretary of State is satisfied.

3.—It is not intended to lay down any precise definition of the qualifications which an applicant for a Colonial Veterinary Scholarship should possess; but in general a candidate should be in possession of, or be about to qualify for:—

(i) A science degree of a British University, or some equivalent qualification; or

(ii) the Diploma of Membership of the Royal College of Veterinary Surgeons.

4.—A scholarship will be tenable for from one to four years, each individual case being judged on its merits, and the period of training will be regulated accordingly. Thus a candidate holding the Diploma of Membership of the Royal College of Veterinary Surgeons and the degree of B.Sc. or B.V.Sc. might be granted a scholarship for two years in order to take a further degree or to undertake research under supervision at an approved institution, or a candidate holding the Diploma of Membership of the Royal College of Veterinary Surgeons might be granted a scholarship for two or three years in order to complete a degree in some special biological subject. A candidate holding a degree in science might be granted a scholarship for four years whilst qualifying for the Diploma of Membership of the Royal College of Veterinary Surgeons. In some instances a scholarship for one year only might be granted.

5.—A scholarship will be of the value of £250 per annum, from which the scholar will be required to pay the fees charged by any training institutions which he is required to attend. It should be clearly understood that these grants are intended to assist scholars materially with the expenses of their training, but not necessarily to cover the whole of their out-of-pocket expenses. Each scholar will be provided in addition to the scholarship with an allowance not exceeding £12 for the purpose of purchasing approved books.

6.—The selection of candidates will be made annually in the summer by the Secretary of State for the Colonies. Candidates may be required to attend for interview before an Advisory Selection Committee.

7.—Applications for scholarships should be made on the forms supplied for the use of candidates for appointment to the Colonial Services. A request for a form of application should ordinarily be addressed in writing direct to the Private Secretary (Appointments), 2, Richmond Terrace, Whitehall, S.W.1. A candidate resident in a Colony or Dominion should, however, submit his request to the Governor (in the case of a Colony) or appropriate authority (in that of a Dominion) and not to the Private Secretary (Appointments). Arrangements are in force whereby a candidate who submits his application to the Governor of a Colony, or the appropriate authority in a Dominion, may be interviewed locally. Completed applications should be received by the Private Secretary (Appointments) preferably before the end of May and in any case not later than the 15th of June. A candidate resident in a Colony or Dominion should accordingly submit his application early in the year. It should be clearly understood that a candidate who desires to be considered for a scholarship and is due to take his final examination in the summer should send in his application before doing so. This will not oblige him to accept a scholarship, should he be offered one, but will enable the Private Secretary (Appointments) to complete his application papers before the selection of candidates is made. A candidate who delays sending in his application papers until later runs the risk of its being found impossible for him to be considered at all, as it is the intention that the award of scholarships should be completed each year during July, in order that adequate time may be available for the arrangement of suitable courses of training.

8.—A selected candidate will be required to be medically examined by the Consulting Physician to the Colonial Office (or, in the case of those residing in a Colony or Dominion, by a Medical Officer appointed by the Colonial Government or appropriate authority). Provided he passes the examination and signs the bond mentioned below, he will receive an initial grant of £83 6s. 8d. He will receive a further grant of the same amount at the commencement of the second and of each succeeding

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University term to which the period of his scholarship extends on production of a certificate from the Head or Heads of the institution or institutions where he was last working that his conduct and progress in his studies were satisfactory.

9.—A candidate selected for a scholarship will also be required to sign an undertaking that he will be willing on the conclusion of his scholarship to take up an appointment, if required, in any Colony to which he may be allotted and to serve there for not less than three years or, failing the fulfilment of these conditions, to refund the sum of £200 in consideration of the expenditure incurred in his training. The undertaking will be in the form of a bond with two sureties and will provide for the refund of the sum of £200 or such lesser amount as the selected candidate may up to that date have received as above if :—

(*a*) he fails to complete his scholarship period successfully within the time allotted, or receives an adverse report as to industry, character, or conduct such as would in the opinion of the Secretary of State render him ineligible for an appointment in one of the Colonial Services; or

(*b*) having been selected for an appointment in one of the Colonial Services he fails to take up his appointment when instructed to do so; or

(*c*) he resigns from or is removed from the service of the Dependency to which he is appointed within three years of his arrival on first appointment in such Dependency. (Should a candidate selected for a scholarship be reported by the Consulting Physician to the Colonial Office at his second examination to be unfit for service, or should he be retired from the service of the Dependency to which he had been appointed on the termination of his scholarship upon the Report of a Government Medical Officer that he was unfit for service in the Dependency, no claim would be made for a refund.)

10.—The Colonial Office will keep in touch with all scholars and will obtain periodical reports as to their progress. It will at any time be open to the Secretary of State to terminate the scholarship of a scholar whose conduct, industry, or progress is not regarded as satisfactory.

11.—If a scholar is selected for an appointment in one of the Colonial Services any preference he may express as to the Dependency in which he wishes to serve and the duties which he will be called upon to perform will be met as far as possible.

12.—When the scholar has been selected for an appointment he will again be examined by the Consulting Physician to the Colonial Office; and if passed fit will have to proceed as soon as required to take up his appointment in the Dependency to which he has been assigned.

13.—A scholar whose final selection has been approved will ordinarily be appointed on probation as a junior officer on his arrival in the Dependency. His emoluments and conditions of service will be those in force at the time for the grade of appointment in the particular Dependency.

14.—Those scholarship holders who are unsuccessful in obtaining appointments will be free to take private employment or to enter their names for consideration in connecton with vacancies in the Colonial Services which may occur later.

Colonial Office,
January, 1930.

Are Present Methods of Combating Contagious Abortion Effective?*

By J. R. Barker, M.R.C.V.S., D.V.H., Hereford.

At the outset I had a certain trepidation in using the words "Contagious Abortion," but on reflection it appeared that there is a real ground for their use in that they are the words generally accepted to mean abortion in cattle as a result of infection with the *Bacillus abortus* of Bang.

At this stage, almost thirty years after Bang's discovery, it is well that we practising veterinarians should examine the situation and see if our methods of control of this most serious bovine epizootic are effective. Let me say right at the beginning that I do not consider they are, and it will be the purpose of what follows to convince you, or otherwise, of the truth of that contention. I have chosen to make the title provocative and questioning because it admits of some argument and in the ensuing debate the present state of our knowledge and clinical wants must surely be made evident.

For the purposes of this paper it is assumed that the *Bacillus abortus* of Bang, variously known as the *Brucella abortus*, or *Alkaligenes abortus*, is the cause of epizootic abortion in cattle. The fact that it has seemed necessary to make this statement may give rise to some discussion. One is old-fashioned enough still to believe in Koch's postulates, not altogether for the mere sake of such a belief, but for the wealth of clinical detail that would be exposed were the *Bacillus abortus* made to satisfy those postulates in English cattle by English veterinarians, among whose number are many experienced clinicians.

Diagnosis.

An examination of present-day methods of control must commence with methods of diagnosis. This is an important consideration, and the analogy with sheep scab is appropriate; one must endeavour to find and identify the invader. There the analogy ceases, for the bacillus may be hidden in the tissues out of reach of any known method. Still, smears taken from material collected, under suitable precautions, from the uterus of a recently-aborted cow, or from the abort or its membranes, can be stained to show the bacillus. Here we strike the first important fact, the bacillus is Gram-negative and non-motile. Those clinicians who have access, on favourable financial terms, to a laboratory can culture the organism for further identification. At certain periods the bacillus is present in the milk of infected cattle. Recovery of the organism from the milk establishes a certain diagnosis. It also opens up a serious aspect of public health, for it is on record that the *Bacillus abortus* is pathogenic for the human species, male and female. How few or how many cases of such human infection exist in England it is difficult to say. A recent discussion at a conjoint meeting of the Comparative Medicine and Obstetrical Sections of the Royal Society of Medicine revealed the fact that the medical fraternity had not applied themselves to the problem.

The agglutination test has had a great vogue during the last 20 years and clinicians should now be in a position to estimate its true worth. A fair amount of

* Presented at the Annual Meeting of the South Eastern Division, N.V.M.A., held at Tunbridge Wells on January 30th, 1930.

reliance can be placed upon a positive reaction, but the position is entirely different in the case of a negative reaction. The test is an *in vitro* one and open to the objections to its kind. The agglutinating properties of blood are resident in the protein (albumen) of the blood plasma. The agglutinating power of any blood plasma depends upon the state in which this protein happens to be at the time the blood is withdrawn from the patient. Normal pregnancy alters the state of the plasma proteins and may convert a positive reaction into a negative one and *vice versa*. Some of McFadyean's published reports on the value of the agglutination test are open to this criticism. Craig, wrongly, I think, assumes that after a series of agglutination tests, when the blood gives a negative reaction the animal has recovered. In the writer's experience such a negative test may mean the absolute breakdown of the cow's resistance, and in actual fact such a cow may be teeming with abortion bacilli and prove the most dangerous animal in a herd. Similarly, the aggutination test can offer no reliable indication upon the efficacy of treatment. Latterly, Bryan has found that the intravenous injection of 20-40 c.cs. of neutral acriflavine solution so alters the blood plasma that it gives a negative reaction in 15 days after injection. Other substances may be found to have the same effect. Laboratory workers who carry out the test are only human and the factor of human error creeps in. In actual practice I tend to use the agglutination test as sparingly as possible and to place no reliance upon a negative test. Consequently I consider the agglutination test to have a limited usefulness in the effective control of abortion. The double intradermal test, as devised and worked out by Holtum, has not come into general use and it would greatly help if any of your members can bring forward their experiences of this test. A clinical examination of the aborting cow, the abort, membranes and fluids can go a long way to establish a correct diagnosis and should, where possible, be made in conjunction with any test. This examination is of a more limited value where the animal is long removed from parturition or abortion, but none the less necessary.

Treatment.

Treatment of cows known to be infected with the *Bacillus abortus* presents one of the main difficulties. Weekly injections of increasing doses of a vaccine containing large numbers of killed organisms is sometimes practised, but cannot be said to be satisfactory. The extreme Gram-negativity of the *Bacillus abortus* may account for the lack of success.

Isolation as a result of the agglutination test is sometimes difficult to accomplish. In those herds where it can be practised and with an intelligent owner (the combination is extremely rare) good results have followed. In herds like the pedigree Herefords, which are out in the pastures all the year round, especial attention has to be given to those negative to the agglutination test. Owing to the margin of error it is amongst these that one must exercise constant vigilance for the premonitory symptoms of abortion. Should these pass unobserved and an abortion take place, all the rest of the pregnant females gather round and, by licking the abort, eating the membranes and discharges, infection is spread throughout the segregated ones.

Disinfection of modern cow-sheds is fairly easy, but the time is still far distant when easily-disinfected premises will be in a majority. Disinfection of pastures is out of the question. The State, by reason of its laws and the advice of its staff, has some relation to the abortion problem. The order with regard to the prohibition of exposure for sale of cattle known to have been the subject of epizootic abortion fails to achieve its object. Various reasons may be assigned for this failure, but nevertheless non-observance of the order results in the spread of infection. Therefore it were better for the country to abandon the law or enforce its provisions. In another direction the State must take a very large share of the responsibility for the gross infection of the cattle of this country. The laboratory of the Ministry of Agriculture supplies live cultures for the artificial infection of cattle. In one year over 22,000 doses of 50 c.cs. each were issued for this mass infection. In theory, these live cultures were intended for the immunisation of cattle against the act of abortion. In practice, they are injected indiscriminately into heifers and cows, pregnant and non-pregnant, with varying results of sterility and abortion. If the damage that such artificial infections do were confined to the herd in which they are made, one could safely leave the stockowner to his own. But such infective cows are sold to other herds just as indiscriminately and spread the infection to healthy cattle. It may be possible to control cultures in a test tube in the laboratory, but once these cultures are injected into an animal control ceases; Koch's postulates begin to be satisfied, disease processes are started, to end no one knows where. These organisms supplied by the Ministry of Agriculture may be passed in the milk, so that we have the serious spectacle of the Ministry of Health devoting its attention to lowering the bacterial count of milk, whilst the other Ministry maintains a laboratory to breed and cultivate organisms which eventually find their way into the milk intended for human consumption—with what effect?

Any serious attempt at the control of infection with *Bacillus abortus* in England must commence with the scrapping of the laboratory manufacture of live cultures. Until this is done the State must take responsibility for the spread of infection amongst cattle and the possible infection of humans.

Country practitioners are continually faced with this problem—What can we do for the farmer who has had his first cow to abort and where the rest of the herd are pregnant? I will try to answer this question and to indicate certain lines of advance. A clinical examination of the aborting animal, the abort and its membranes will give some indication as to the possible causative agent. Smears from discharges will indicate the presence or absence of *Bacillus abortus*. The agglutination test, in conjunction with this clinical examination, will give further assistance. The double intradermal test with abortion would perhaps be more accurate. Having ascertained that the *Bacillus abortus* is the culprit, the agglutination test or the double intradermal test applied to the rest of the herd will give an indication as to the affected and non-affected. Isolation and disinfection automatically follow. Treatment of the affected with the object of bringing about complete bacteriolysis is indicated. During the last four years I have been using Contramine and S.U.P. 468

intramuscularly for this purpose. These chemotherapeutics have given encouraging results and it may be that they represent a stepping-off point for the effective treatment of cattle infected with *Bacillus abortus*.

Increasing the resistance of the non-affected should be the veterinarian's prime concern. Injections of killed cultures as vaccines at weekly intervals in increasing doses will acquaint the animal's protective mechanism with the nature of the proteins of the bacteria to be encountered later. In several herds this has given apparently satisfactory results; in any case, it is the best means so far. The owner and his herdsman need to be instructed in the art of spotting possible aborters and, more particularly, to become conversant with the appearance of healthy fœtal membranes and the lesions on diseased ones.

Before any further advance can be made in the solution of the abortion problem, further research work is necessary. The special needs of clinicians should be the aim of such research workers. These needs are :—

1.—The satisfying of Koch's postulates with the *Bacillus abortus* and the observation and record of all clinical expressions of the disease so produced.

2.—The working out of a satisfactory field test as an aid to diagnosis. The sub-palpebral test with abortin might be explored.

3.—The trying out of chemical substances for the treatment and eradication of the bacillus from the affected. Contramine and S.U.P. 468 may be a start.

4.—The elucidation of a satisfactory method of preventive inoculation. Why not an aggressin?

Discussion.

Dr. W. H. Andrews, Director of the Ministry of Agriculture's laboratory at Weybridge, who opened the discussion, thanked the members for the opportunity of attending the meeting, and congratulated Mr. Barker on having selected as his subject one that was of the utmost importance and certainly one that would form an excellent basis for discussion. No one would question the fact that contagious abortion was one of the outstanding problems with which cattle breeders were faced in this country. It was a subject of the highest importance to both stock breeders and veterinary surgeons, and it was one of extraordinary difficulty. Nobody could offer a simple solution.

The first point he wished to take up was the question of Koch's postulates. One's opinion of that question necessarily depended on the exact meaning one attached to the term "contagious abortion." Nobody would claim that *Brucella abortus* was the exclusive cause of abortion in cattle, but there was no doubt that in this country, and in most of the countries of the world, there was a disease of cattle caused by *Brucella abortus* which was frequently accompanied by the act of abortion. In connection with that disease, he considered that Koch's postulates had been satisfactorily met. The organism had been recovered in pure culture from a series of cases of the disease. It had been sub-cultivated through many generations. Cases of the disease had been satisfactorily reproduced, and pure cultures of the organism had been recovered from the inoculated animals. He did not, however, dispute at all the fact that one might encounter forms of contagious abortion in cattle which were not due to *Brucella abortus*.

He agreed with Mr. Barker in emphasising the fundamental importance of diagnosis, and he agreed with him that clinical examination and examination of the fœtus was a thing to be encouraged. With respect to the microscopic examination of smears, he would not regard that as a general rule as a very useful or practical means of diagnosis. There was no doubt that when material was obtained in a sufficiently fresh state, smear preparations might show characteristic clumps of bacilli, but it might be very difficult to find them, and in a large number of cases the material secured for examination was so contaminated with other organisms that smear examination no longer furnished a satisfactory method of diagnosis. It was, in his opinion, a means of diagnosis that should be attempted only by those who were constantly using the microscope, and the majority of such men, while they might note the presence of these organisms by direct examination, would almost invariably attempt to confirm the diagnosis by other means. In the same way, cultivation was a procedure that was practicable only in a laboratory and with material in a suitable condition. With respect to the agglutination test, he found himself in almost complete disagreement with Mr. Barker. He certainly agreed that the test was not absolutely infallible, that it did not give a correct answer in 100 per cent. of cases, but there was no biological test applied in connection with any disease that could be regarded as infallible, although a number of those tests in common use had proved of the utmost value. Mr. Barker had expressed his dislike of the test because it was an *in vitro* test, but a number of *in vitro* tests had proved their value over the course of many years, and in some cases such methods had permitted whole countries to be cleared of certain diseases. He would quote as an example the complement-fixation test for dourine, which had rendered extremely good service in permitting the diagnosis of obscure cases. He thought that a general review of the work of many investigators in many different countries would lead them to say that the agglutination test, in cases of infection due to *Brucella abortus*, was a test of great accuracy, although it might not be infallible.

A considerable amount of work had been published, suggesting that under certain conditions an infected animal might give a negative result. In the main, that work could not be taken in any way as having discredited the test. It was admitted that the test was not infallible, and this work had served the useful purpose of teaching them something of its inevitable limitations. Mr. Barker had spoken of the possibilities of human error, and that applied to all work, both in laboratories and in the field. The value of agglutination test certainly depended in the first place upon the man who performed it, and the experience he had had of the test. Further, there were various strains of the organism, some agglutinating better than others, and there was undoubtedly a need for standardisation. There was another important point, the question of what titre should be taken as significant, that was, exactly what standard should be set in deciding whether a result was positive or negative. Until recent years the standard had undoubtedly been set too high. He considered that complete agglutination in a serum dilution of 1 in 25 might be taken as indicating certain infection, whereas in the past the standard had usually been fixed as high as 1 in 100. In spite of that fact, years ago, when the standard had undoubtedly been set too high, the test had rendered extremely valuable services. Infected herds had been cleared entirely of infection by that method, and that after all was the real test. He had personal knowledge of a herd in South Africa which had been freed entirely from infection, many years ago, by means of agglutination tests carried out by a colleague. The question of pregnant animals had been mentioned, and there appeared to be little doubt that special precautions might have to be taken in connection with pregnant cows. This fact did not in any way render the test useless. The real point was that it might prove insufficient in attempting to eradicate infection to re-apply the test only after the lapse of considerable periods such as a year, or even six months. He thought that there were indications that more than that was desirable, and for complete eradication we needed more numerous and more frequent tests than had usually been applied in the past. It had been recommended by a number of workers, including Vallée, that when it was desired to keep a herd free from infection, not only should no animal be introduced into the herd until it had given a negative result to the agglutination test, but that in

particular a pregnant animal should always be strictly isolated until it had calved, and that it should then be subjected to a further test.

He considered that it would in every way be most regrettable if veterinarians were persuaded not to rely upon the agglutination test, because he believed, in the first place, that the test was extraordinarily valuable and accurate, and in the second place, they had nothing whatever to put in its place. He did not mean by that that he considered that there would never be anything more accurate. It was no doubt quite possible that a more accurate test, perhaps some modification of the existing test, might be devised, and it was no doubt desirable that laboratory workers should attempt to find such a test. Mr. Barker had stated that the animal which gave a negative result might be the most dangerous animal in the herd. That was perhaps a possibility, but he would like to ask Mr. Barker whether he knew definitely of such a case. While admitting such a possibility, he thought that such cases must at least be extremely rare, and when such a case was reported one would like to see full proof of its character. That was, one should know details of how the agglutination test was applied and the actual result obtained, and also the grounds for the assertion that the animal was teeming with bacilli.

The double intradermal test had been mentioned, and he thought that the only publication dealing with such a test had been that of Holtum. Holtum's work had been done in the speaker's laboratory and at his suggestion, and he thought that, although the test gave some promise, it could not at present be regarded as having been proved to be as accurate as the agglutination test. Mr. Barker had also spoken of the possibilities of a sub-palpebral test for abortion. That had also been explored at Weybridge, and, whilst the results were to some extent encouraging, as far as the work had gone the test appeared to be considerably less accurate and less sensitive than agglutination.

He wished now to deal with the important question of vaccination. Everybody would agree that the ideal method would be to immunise animals by inoculation with dead organisms or with the products of organisms carefully freed from any bacteria. So far as published experimental work went, the ideal had not been attained, and at present there was no proof that dead organisms gave any serviceable immunity. He thought that one could not accept evidence that permitted other explanations, and one had to be extremely careful in dealing with evidence concerning contagious abortion. The behaviour of the disease was peculiar, and unless there was a carefully designed scientific test with suitable controls, one could not be certain that any results following some particular operation were really due to that operation. Striking results had been reported from the field with all sorts of remedies, including some very definitely "quack" remedies. The real value of any procedure could be estimated only by means of a special test, in which a sufficiently large proportion of a herd was left untreated, and one knew how extremely difficult it was to do that in a private herd. Experience in the field would of course ultimately show the real value of any procedure, but over limited periods complicating factors might render field results highly misleading. The only evidence of immunisation yet published had been connected with the use, under suitable conditions, of live cultures. He did not claim that the use of live cultures was an ideal procedure. It was far from ideal, and was used only because there was nothing better, or even as useful, to employ under many circumstances. The Ministry very definitely recommended that whenever possible an attempt should be made to eradicate the disease by separation of the herd into two groups of reacting and non-reacting animals, the reactors being killed off or kept permanently separated. If the infection was widespread in the herd, however, or if the general condition of the premises and the circumstances of the farmer rendered it practically impossible for eradication by isolation to be attempted, and if losses continued to occur in the herd, then the inoculation of the live vaccine to prevent loss should certainly be used. Mr. Barker had spoken of the indiscriminate use of that vaccine. The Ministry had certainly never recommended its indiscriminate use. They had always stated that under no circumstances should it ever be used on farms on which abortus infection was not already definitely established. They recommended that it should be used only when infection was heavy and circumstances were unfavourable to eradication by isolation. There was nothing indiscriminate about their recommendations, but very naturally they left to the practising veterinarian the decision as to whether a particular case was one for eradication or for vaccination. He would not like to think that the Ministry were wrong in trusting the practitioner. He considered that the vaccine, if properly used, should not directly introduce infection on to any farm. He admitted the possibility that a proportion of the vaccinated animals might become carriers and excrete the bacilli in their milk. That could happen, of course, when a cow in active lactation was inoculated, although when a non-pregnant heifer was inoculated all the available evidence suggested that the infection was eliminated entirely from the organism. But although a proportion of the vaccinated animals might ultimately become carriers, the vaccination was properly performed only on premises on which practically all the cows were expected to become infected, and very possibly to become carriers, by natural means. It merely amounted to this, that where one considered it to be impossible under existing conditions to prevent the natural spread of infection through a herd, one introduced the infection, into the animals which were as yet unaffected, at a favourable time and under favourable conditions, so avoiding actual loss to the farmer. It was extremely difficult to get much definite evidence from the field as to the actual value of the process. The available experimental evidence, and practically all of the field evidence that had been obtained, was favourable.

He had alluded previously to the peculiar behaviour of the disease, and he would not attach too much weight to a few reports of favourable results in the field, but most of the reports were very definitely favourable. He was most anxious to learn of any unfavourable results that were obtained, but very few indeed had been brought to his notice, and if any of the members present had encountered any difficulties or unfavourable results, he would be very pleased to hear of them.

A point of some possible importance was the question of human infection. He felt that no hasty conclusions should be drawn and that the whole matter was still one of considerable doubt. In view of the work that had been published, one could not definitely reject the possibility that man was susceptible, but the evidence at present available seemed certainly insufficient to allow them to conclude that ordinary strains of *Brucella abortus* were pathogenic for man. If they were pathogenic, there should be a large amount of undulant fever in this country. It was admitted that the infection was very difficult to recognise in man, especially if no definite suspicion of its existence had been aroused. The infection had been looked for over a longer period in a number of foreign countries, and many more cases of human infection had been reported in some of them, but when they considered the possibilities in connection with *B. abortus*, he thought that they had to discredit, or to accept with great caution, the evidence from countries where ordinary melitensis infection was known to exist. The two organisms were extraordinarily difficult to distinguish in the laboratory, although from the practical point of view there was no doubt at all that they differed very greatly in their virulence for man, and even those who were inclined to go furthest in connection with the possibilities of human infection with *B. abortus* would certainly not claim that the infection was as severe as that with melitensis. The cases that were considered to be due to abortus infection were, in most cases, comparatively mild, and the number that had so far been recorded in this country was very small indeed. He did not think that all these cases, few as they were, had been satisfactorily proved, and if *B. abortus* were at all pathogenic for man, one would expect to find a very considerable

number of cases in this country. They should occur, moreover, especially in heavy milk drinkers, but the majority of the cases of abortus infection appeared to have occurred in adult males.

He considered that the whole matter was still open to considerable doubt, and that there was nothing to show at present whether the explanation was the great susceptibility of a few individuals to an organism that was harmless to most of the species, or whether there were peculiar strains of *B. abortus* with greater virulence for man. There was, in fact, so much to be explained that one could hardly base very definite or drastic measures on any presumption, based, as it would be, on very indefinite grounds.

He thought that one of the most important matters in connection with the eradication of *B. abortus* was the question of isolation. The practising veterinarian was often called upon to advise as to the best measures to take, and the degree of isolation possible and necessary was an important factor in that decision. A large proportion of the more recent work on that subject had been done in America, and he hoped that Mr. McEwen would tell them something of American opinion in that matter.

He would say, finally, that he agreed very heartily with Mr. Barker as to the need for further research. That need was very fully realised. He thought it most desirable that attempts should be made to increase their knowledge in several directions, and to improve on existing methods, so as to give them some hope of eradication under ordinary conditions. It was definitely possible to eradicate the infection, but it was a difficult process that was also apt to be costly, and under many circumstances in the field it might well appear impossible. Among the subjects for investigation, he would certainly include that of additional and improved methods of diagnosis, but there was no doubt whatever that the agglutination test was at present the only really reliable test they had. With its aid, it was at present definitely possible to eradicate the disease, and without it, any attempt to control the disease would be foredoomed to certain failure.

Mr. A. D. McEwen said that when he received an invitation from their secretary to attend the meeting it gave him great pleasure, as the subject under consideration was a most important one and likely to lead to extensive discussion.

Dr. Andrews had already dealt with many important points and with a great deal of what Dr. Andrews had said he was in complete agreement. He thought diagnosis of *B. abortus* infection in the field was extremely difficult; one reason being that abortion might be produced by micro-organisms other than *B. abortus* and the symptoms shown by the subject and the microscopic appearance of the fœtus were identical with those shown when *B. abortus* was the cause of the disease. There was one feature which was claimed to be diagnostic of *B. abortus* infection, namely, a thickening and leather-like degeneration of areas of the chorion between the cotyledons. His own experience was that these areas of degeneration might be absent, although *B. abortus* was recoverable from the membranes.

Microscopical examination was not a certain means of diagnosis; it was frequently impossible to demonstrate the bacilli microscopically when suitable cultivation showed them to be present. The actual demonstration of the bacilli was the only certain method of diagnosis, but it was generally an involved and laborous procedure and could only be applied to a limited number of individuals. For ordinary purposes of diagnosis we were dependent upon a test such as the agglutination test, and the proof of the value of the agglutination test lay in the fact that in this country, on the Continent, in South Africa and in the U.S.A. herds had been freed and maintained free from the disease by the aid of the agglutination test and the utilisation of the information supplied by that test. To expect success, the agglutination test had to be applied frequently and at short intervals of one to two months until it was reasonably certain that the disease had been eliminated from the herd. Mr. Barker appeared to admit that good results had followed the use of the agglutination test, but admittedly the limitations of the test Mr. Barker mentioned were there, *viz.*, that a few infected pregnant animals might not react until a few days from aborting or calving. This made it highly desirable to isolate non-reacting cows from their fellows at the time of calving until it was certain they were not infected. There was no satisfactory explanation to account for the occasional failure of the test.

If all that was claimed for Holtum's test was correct, then before the test could be accepted as equal in value to the agglutination test it would have to be shown that by the aid of the test herds could be freed from the disease. This would necessitate repeated applications of the test and it would have to be proved that repeated testing did not sensitise non-infected animals and cause them to react to the test.

The great drawback to control, based on segregation, was that 90 per cent. of farmers were unable to apply such measures. He had visited a number of herds in the U.S.A. which had been freed from contagious abortion and the owners were most enthusiastic over the results; sterility was practically *nil* and the calf pens were full.

He agreed with Mr. Barker that the law was inadequate, one reason being that animals which did come under the law might be a fertile source for the spread of the disease.

Concerning the use of dead vaccine, he was in agreement with all Dr. Andrews had said. Living vaccine and its use presented a problem which had to be faced. Living vaccine might be either virulent or avirulent. There was no evidence to show that immunity necessarily depended upon the use of a virulent vaccine and such a vaccine would often cause infection. There was no evidence to show that to acquire an immunity infection with the disease was necessary. It was possible that good results might be obtained by using an avirulent vaccine, incapable of causing an infection. The Ministry's vaccine strains had been in artificial cultivation for several years and had probably lost much of their original virulence, therefore there might be no great risk in inoculating pregnant animals with the vaccine; that, however, was a risk individual practitioners took upon themselves. He thought it was very regrettable that the Ministry was not in a position to say just what degree of virulence their vaccine possessed. The accusations made against the Ministry's vaccine were unwarranted. If the vaccine was used indiscriminately it was not the Ministry's fault.

Huddleson's work on avirulent vaccine was pregnant with possibilities. It had been shown that the vaccine did not produce infection in pregnant or lactating animals and field tests had been carried out with very encouraging results.

There was no evidence to show that vaccination with living cultures had anything to do with sterility. That point had been investigated by Fitch and his co-workers and by Heart and Traum in the U.S.A., and they had found that the incidence of sterility was not increased by the use of living vaccine. Mr. Barker's statement that vaccination produces sterility should not pass unchallenged; moreover, such a statement should be supported by proof, though it might be difficult to obtain such proof.

With chemo-therapeutic measures of control they were not on very hopeful ground and in judging the effects of any treatment upon contagious abortion the difficulty of adequately controlling the work had again to be contended with.

In the U.S.A. a great many cases of human infection appeared to be caused by porcine strains of *B. abortus*. In this country it had still to be shown that pigs were infected with the *B. abortus*, but if they were not so infected the absence of porcine strains might have some bearing on the comparative absence of evidence of human infection in England.

Mr. J. B. Dier stated that in his practice contagious abortion had been a bug-bear for years, and when the Ministry first brought out their live abortion vaccine he was only too glad to have the opportunity of

using it. He used several hundred doses and in several instances he must say that he had very good results from it. But, as most practitioners knew, it was very difficult on many farms to get the farmer to carry out one's instructions.

He thought Mr. Barker mentioned that the live vaccine was injected into pregnant animals; he had always avoided doing that, if possible. At one farm he vaccinated 17 cows with the Ministry's vaccine, and the next afternoon he found one cow dead and another cow down. On *post-mortem* examination of the cow that was dead, however, he satisfied himself that the vaccine had nothing to do with it; she was suffering from advanced heart disease. The other cow was comatose and although she had calved for over a month, it looked a typical case of milk fever, to the treatment for which she responded. In other cases he had found that the vaccine answered very satisfactorily, but as a rule as soon as the farmers found that the slipping of the calves was stopped they forgot about having the treatment carried on.

As to the dead vaccine, he had had a good deal of experience with the Genatosan product Nator B, as some of his clients objected to the live vaccine, and one of his clients said it was the finest material he had seen. This man had had a great deal of abortion before, but now most of the cows went over their time. (Laughter.)

He (Mr. Dier) had often wondered whether, if a calf was born from a cow affected with abortion, that calf would remain immune from abortion during its life. He thought one of the greatest factors in the spread of abortion infection to-day was the discontinuance of the practice of burning the cleansings of aborted cows, which nowadays were often thrown on the manure heap—a fine place for the incubation of the bacillus—as a result of which, in course of time, infected material was scattered all over the fields, infecting cows out at pasture. If they could educate the dairy farmer to the importance of burning or otherwise destroying the discharged material and of isolating any cow that might abort, having it washed out with a good disinfectant when she did so, he was confident that the incidence of the disease would be materially reduced.

He wished to thank Mr. Barker very sincerely for coming all the way from Hereford to lay that subject before them in the able manner he had done, and he hoped that they would gain great benefit from that discussion.

Mr. A. Spicer, when called upon by the President, said that he thought that practically all the material points of the subject before them had been covered by the previous speakers. The chief difficulty seemed to be that one got a mixed infection. The majority of the results he had had in cases of abortion due to Bang's bacillus had been good, but in herds where there was a mixed infection or where the infection was of a nature entirely apart from that produced by Bang's bacillus, the amount of sterility that followed was simply tremendous, and it seemed impossible to deal with those cases in any way.

As far as the agglutination test was concerned, the results one obtained seemed to be rather difficult to follow.

He remembered having sent blood from six to eight cows on a farm to a laboratory, and receiving the report " negative " in every case. But the abortions kept going on and the farmer was not satisfied, so he (Mr. Spicer) decided to send a further sample from each of these cows. This time the results were all " positive " and the owner did not know what to make of it. In another case a heifer which had only been served six weeks aborted and no precautions were taken, she being allowed to run with the rest of the cattle. The owner suddenly became alarmed, a sample of blood was taken from her and the answer came back " positive," yet there had been no further outbreak on the farm.

As for the vaccine, the results, as far as his experience went, had been extraordinarily satisfactory, and most of the farmers who had used it continued to do so and with very good results. He thought, however, that the vaccine should never be used unless the cattle were going into herds where they would be exposed to infection.

The Hon. Secretary now read the following communications, relative to the subject under discussion, which had been received from absent members:—

From Major G. W. Dunkin, *Superintendent, Medical Research Council's Field Laboratories, Mill Hill*:—

" Mr. Barker, an admitted authority on the clinical manifestation of bovine contagious abortion, has produced a typically sound and practical paper for our consideration. It is a subject with which every veterinarian is concerned to a greater or lesser degree and we are indebted to Mr. Barker for a frank expression of his views based on a vast clinical experience.

" Mr. Barker initiates his paper by asking a question: 'Are Present Methods of Combating Contagious Abortion Effective?' and proceeds at once to answer it by saying that he does not consider they are and to demonstrate views in support of this contention.

" One finds some difficulty in seeing eye to eye with the author when he compares contagious abortion with sheep scab, even though ' one must endeavour to find and identify the invader,' for although, as he says, ' there the analogy ceases ' it might have been wiser not to draw such a picture.

" Mr. Barker has rightly stressed the pathogenesis of the causal organism of contagious abortion to the human subject and from the purely veterinary point of view this is not the least important phase of the subject.

" It would have been valuable had Mr. Barker adduced evidence for his opinion that ' a fair amount of reliance can be placed on a positive reaction ' when referring to the agglutination test, for without such support one is inclined to infer that he does not attach a great deal of importance to this method of diagnosis, which is not quite in keeping with views expressed by veterinarians in other countries—America and Germany—and even at home. Like all other tests, it is not infallible; indeed, if it were, one might be excused for harbouring doubts as to its value, and as Mr. Barker rightly says, a negative reaction is not necessarily evidence of the absence of disease. Assuming, however, that technique, etc., leave nothing to be desired, it is more than likely that some of the negative agglutination results observed in a herd recently infected may be due to the fact that infection is so recent that they have not yet become sensitive to the test. If I may, like Mr. Barker, make an analogy, I would say that the same phenomenon is observed in tuberculin testing.

" I must, in all humility, frankly disagree with Mr. Barker when he says that treatment by dead vaccine ' cannot be said to be satisfactory '; indeed, I am not sure that Mr. Barker himself believes this to be a correct statement, for later on we read ' in several herds this has given apparently satisfactory results; in any case it is the best means so far.' It is to be hoped that the strongest support will be given to Mr. Barker in his wholesale condemnation of treatment by live cultures. My own view is that it is dreadful treatment and certainly should not be tolerated. I have given this question much thought and can find no reasonable excuse for adopting the only certain method of spreading the disease—for spread it must in the present state of control, or lack of control, which we possess to-day over this very costly disease.

" To quote again: ' In herds like the pedigree Herefords which are out in the pastures all the year round special attention has to be given to those negative to the agglutination test. Owing to the margin of error it is amongst these that one must exercise constant vigilance for the premonitory symptoms of abortion.' I will cite one case in support of the view I hold. Contagious abortion appeared among a herd of pedigree Sussex cows kept entirely for export which were never housed, and calves were with their dams for many months. The agglutination test was applied and although only 10-15 cows and heifers out of about 80 actually aborted, the percentage of positive reactions was very high. As a result of the test every female bovine in the herd received the killed vaccine treatment, and three injections were given

at weekly intervals. It is a point worthy of notice that pregnant animals in all stages of pregnancy were injected.

" During the test and subsequently only three animals aborted. This was in 1921. The herd was disposed of by sale in 1928 or 1929 and no further case was seen during that time.

" The pastures on which the animals grazed were low-lying marshy lands and these were thoroughly harrowed and treated with quick lime, the beasts being meanwhile kept on only a part of the pastures.

"A point which I always wanted to clear up was at what period, if at all, would any of the treated animals fail to respond to the agglutination test or any other similar method of diagnosis, but owing to my departure for London I lost touch with the herd.

" In conclusion, I would ask Mr. Barker one question. Does Mr. Barker really hold the view that the methods at our disposal are ineffective or does he think that the carrying out of these methods leaves much to be desired? "

From Mr. E. P. Barrett, Margate :—

" I am sorry to say that I see very little prospect of getting down to the Meeting on Thursday. Its a very long way to come and there is a meeting here to make some arrangements about the Royal Sanitary Institute Congress which is to be held in Margate this year. I hope someone will ask the essayist for full particulars of the Contramine and S.U.P. 468 line of treatment that he has been trying. I should very much like to know about it."

From Mr. E. Ebbetts, Rochester :—

" I have read Capt. Barker's paper and congratulate him on it.

" The trouble in my practice is to get clients properly to carry out any treatment after proving to them that contagious abortion exists. We tell them about separating the affected cows from the others and explain to them the importance of having different men to attend them, etc. They at once say it cannot be done. Some say, ' find out those that are affected and I will sell them.' Thus the disease is spread all over the place. Small farmers and small cowkeepers cannot stand the loss and so they pass it on to someone else—very wrong, but what they can do? Again, some who can afford to do differently do not hesitate to sell.

" The Act, in its present form, is useless. Of course, the chief thing to aim at is to find a vaccine or something to prevent the disease. I am afraid a cure for it is as remote as one for Johne's disease.

"A cure for these dreadful diseases would be a god-send to farmers."

Mr. Crowhurst now enquired whether or not the bull was a very serious factor in the spread of the disease.

Mr. Hugh P. Hogben asked " exactly how we stand in regard to the live and the dead vaccine." He had never tried the dead vaccine, therefore he could not say whether or not it was suitable, but the majority of expert opinion seemed to be that it was valueless.

Mr. Charles Roberts said that he would like to thank Capt. Barker, and not in any formal way, because it was no small thing to have prepared such a paper, and to have come such a distance as from Hereford to present it to them. (Applause.)

He looked upon that disease from the point of view of the farmer; it was the first aborter on the farm that presented the difficulty. One animal, perhaps a new importation amongst several others, aborted, and the farmer asked the veterinary surgeon what he was to do. He (Mr. Roberts) thought that if it were practicable to fatten the animal, and sell it to the butcher, that would be the best way out of the difficulty, but if the infection was extensive, one did not know anything better than vaccination with one of the vaccines. He used that sent out by the Ministry of Agriculture, and he had a very strong conviction that that was a most useful method of dealing with that disease. In a number of herds where they had been troubled with the disease for several years, it appeared to clear up in from 20-24 months, and one knew from the farmer himself how delighted he was with the result.

He had hoped that Mr. McEwen would have told them whether they were still vaccinating in America, where at one time they had a great craze for it.

He believed they had discarded its use now, looking upon it as a dangerous practice. Their lack of success, he thought, was because they did it on such a wholesale scale, taking the live vaccine on to places where infection probably did not already exist. In that part of the country the practice was to vaccinate any empty animals—and then not without due deliberation as to the extent of the disease in the herd. When employed with care and judgment, he was certain the symptom of abortion disappeared from a herd much more rapidly than when vaccination was not practised, and he regarded this method of dealing with the malady with favour.

A thing that happened in his practice (proceeded Mr. Roberts)—a disagreeable thing, he thought, at the time—was that a farmer came to his surgery at night and asked him to obtain for him two doses of vaccine; he had 17 cows, and the remaining 15 had already been vaccinated. His (Mr. Roberts') assistant had been doing the vaccination over a period of 18 months, and he did not know any details and asked " How are you getting on with them? " The farmer replied " Oh, I have had no trouble, I have never had any abortion on the place, but you were doing Mr. A's near by and I thought I had better have mine done." (Laughter.) All that man's cows had been vaccinated and he had never had any abortion before or since.

The speaker concluded by expressing the opinion that stagnant pools were probably a grave source of the spread of infection as in the case of Johne's disease, and that the time had come when proper water containers should be put into fields, and an adequate water supply laid on from healthy sources.

Mr. McEwen answered a question raised by Mr. Roberts by saying that in the U.S.A. it had always been admitted that vaccination failed to protect a certain proportion of the animals and it therefore was not claimed as a perfect means of control. Great success had attended the eradication of the disease and with characteristic enthusiasm the Americans had accepted eradication as the better method. The scare caused by the discovery of human infection had stimulated and added impetus to the eradication policy. In the U.S.A. many herds were free from tuberculosis and it was in these herds that the eradication of contagious abortion was being practised.

The Reply.

Mr. J. R. Barker, replying to the points raised in the discussion, said that he had spent a very delightful afternoon. He had heard more about abortion than he had hoped to hear, and he would do his best to reply to the points that had been brought forward.

They would have noticed that they were divided into two schools—those who worked in the laboratory and those who worked in the field. The first school said that the tests and vaccines were reliable and accurate in their working and results, whereas those who worked in the field expressed doubts as to that accuracy. Then the laboratory workers doubted the capacity of those of them who were clinicians to observe results and to give the correct interpretations to the reactions obtained.

He would be the first man to welcome and to give any help he could to anyone who would bring a laboratory down into the field, which was the place where these things happened. They must all remember that in the activities of the men in the field the economic element loomed very large. The standard of treatment, of prevention, of isolation, etc., should be taken as what their poorest client could afford to do, because if the disease broke out amongst the cattle owned by such men as these the infection would be spread all over the country, irrespective of the successes which might be achieved amongst the herds of their wealthier clients.

He was extremely indebted to Dr. Andrews for the lucid and masterly manner in which he had opened the discussion. Dr. Andrews had spoken of Koch's postulates as having been satisfied. He (Mr. Barker) had been hammering at that question ever since he came back from the Army, and he maintained that they had not been satisfied in England. It was true, as Dr. Andrews had said, that the *Brucella abortus* had been injected into cattle, that it reproduced the disease and that the organism had been recovered from the abort and membranes. How did Dr. Andrews or the man who carried out the experiment know that the subject of the experiment was free from the disease? That was exactly the trouble; how did they know that any of those animals were free from the disease? If so, they could have a field test right away. That was where it broke down, and it was not for the sake of criticism that he said this, but for the sake of the clinical evidence that would come out of such an experiment if it were carried out in England. They had for far too long allowed Bang and his experiments to rule what they did in England. He did wish to make that point, and he wished it to be thoroughly understood that he entirely disagreed with Dr. Andrews when he said that Koch's postulates had been satisfied in England. However, he was pleased that Dr. Andrews agreed with the necessity for a clinical examination and that all tests, of whatever kind, should be interpreted in the light of a clinical examination. He would give them an instance with regard to another disease; he should hesitate to pass as free from tuberculosis a young animal that had post-pharyngeal abscesses although she did not react to the tuberculin test—so that those tests, even if they did get a negative result from the laboratory, must be taken in conjunction with what one saw in the cow if she had aborted and had the characteristic lesions of necrosis in the fœtal cotyledons themselves.

He had raised the question of the value of an *in vivo* test as against an *in vitro* test. He himself was all in favour of the *in vivo* test; they could do their own interpretation and their own test if they were supplied with the material with which to do the test.

Dr. Andrews raised the question about the incidence of that disease. The disease was on the increase, it kept recurring even in those places from which they thought they had cleared it. That raised another point; he had known herds to be infected in 1918 with the live vaccine and apparently the disease had cleared up. Seven, eight or nine years afterwards there had been another abortion storm on that farm without the introduction of any fresh animals into the herd. It was necessary, therefore, to take long views as to what interpretation one should place upon one's results.

Dr. Andrews spoke about the standardisation of strains and the standardisation of the titre and said that, in recent years, the titre had been set too high. He was sure that they as clinicians would dearly love to see these laboratory workers set their house in order (Laughter) so that they did standardise their strains and their titre, and the live vaccines.

Then Dr. Andrews asked him for a definite case of a negative reactor teeming with bacilli. He would refer him to M'Fadyean's report in the *Journal of Comparative Pathology and Therapeutics*. That was not his own case, and he had not had a definite case of a negative reactor teeming with organisms, but he had had experience of several cases where animals had given a negative result to the test and had aborted, showing what he would call the diagnostic lesions both in the abort and on the membranes.

It was rather disquieting to hear that the intradermal test, as worked out by Holtum, was not satisfactory, and even more so to hear that the sub-palpebral test was less accurate than the agglutination test. He had hoped from the experience of practitioners in injecting the dead vaccine into animals already affected, that the big local reactions obtained after injection with these dead bacilli (the protein of which was very closely allied to the protein of abortion), would point to the possibility of getting a good sub-palpebral test.

What did they mean by vaccination? Dr. Andrews had gone on to say that the ideal product would be the dead vaccine, and he was cautious about accepting their field evidence, but asked them to accept laboratory evidence. There again they were pulling apart when they ought to be working together. Of course, there were a great many "quack" remedies and he was quite willing to give details of the use of Contramine and of S.U.P. 468 to members of the profession who enquired of him personally, but not for publication, as he had reason to know that other people were seeking to take advantage of the work they were doing.

Dr. Andrews had said that live cultures injected prevented those grave losses to which farmers were subject on account of abortion, and again asked for evidence of cases in which they failed to prevent those losses. Several years ago he went to York and, at the National Congress there, gave the result of injecting the live vaccine into a series of cattle. He had never yet received any satisfactory explanation why those valuable cattle, worth at the time of injection £400 apiece, were reduced to animals worth about £25 as a result of the Ministry's vaccine. If that live vaccine were attenuated or avirulent he would ask those who prepared it, how did they know? Had they got a test of its virulence, and how did they know that its virulence would not be exalted by its passage through another animal? He was positive that abortion was being spread in this country by the manufacture of organisms in the Ministry's laboratory. He therefore made the statement that it ought to be stopped. In that connection it would be interesting to compare the disease caused by the *Micrococcus melitensis* in human beings. He had often thought that supposing Dr. Andrews and himself were out in Malta and Dr. Andrews was the medical officer and he the veterinary officer, and there was an outbreak of Malta fever amongst the men, would Dr. Andrews go down and inject the rest of the men with the live vaccine. If not, why do it in cattle? If the *Brucella abortus* was pathogenic and would satisfy Koch's postulates it would produce those lesions in cattle into which it gained entrance.

There seemed to be some doubt as to the connection between *Brucella abortus* and sterility. In conjunction with Professor Glynn he had examined quite a lot of animals that had the naturally occurring abortion. They found the *Brucella abortus* in the smears. They slaughtered the sterile ones and Professor Glynn made sections of the uterus and the uterine glands. In the mucous membrane of the uterus there was a lack of staining ability, and Professor Glynn was of the opinion that the membrane that had lost the staining ability might also have lost its secreting ability. Those uterine glands supplied uterine milk to the fertilised ovum two or three days after fertilisation. That, he maintained, was the connection between the *Brucella abortus* and sterility.

He was an example of an adult male who was a milk drinker, so that there were plenty of people liable to infection in the adult stage.

He was glad Dr. Andrews agreed with him as to the necessity for further research, and he could assure Dr. Andrews that he was ready to co-operate with him wholeheartedly in any research which he might undertake.

Mr. McEwen had raised the question of the membranes and the chorionic thickening. That sometimes occurred, but he would rather, for the purpose of diagnosis, take the condition of the fœtal tufts.

Mr. McEwen had said that the agglutination test had been of value in clearing up herds in America. The test had been in use for 25 years in England and we had more abortion than ever, and in thinking of these methods that we were using—that they were not effective—he would ask anyone to look around and see whether we were making any impression upon the abortion problem in England. Did Mr. McEwen imply that American laboratory workers were better than English because of the

apparent superior efficiency of the test in America? All those agglutination tests were costly and delay was experienced when one had to go into the country, take blood from the jugular vein, send it away, wait for the reply, and send another sample in a month's time. One's client then had already been put to big expense, which might have gone far in the treatment of the herd if one only had a reliable *in vivo* test to apply to the animal. He would again ask them to accept as the standard the poorest client they had on their books.

Mr. McEwen also deprecated Holtum's test. Supposing that animals that had been injected with abortion were sold, he (Mr. Barker) would say that that again would vitiate the value of any subsequent agglutination test.

He had already dealt with the matter of the exaltation of virulence, and with that of sterility following vaccination. No one had afforded a satisfactory explanation of that, except the one that he had mentioned—that the organism reproduced the disease in the animal and led to sterility. He had seen a dozen animals standing in a row being fattened because they would not hold to the bull after the injection of the Ministry's vaccine.

He had noticed that a subsequent speaker had said that some of his clients would not have the live vaccine; that speaker had some good clients. (Laughter.) How had that news got round? In the same way that men spoke of their bad results, but would not come forward and publish them, and they must remember that it was by the ventilation and study of the causes of bad results that one got to the bottom of things and not by merely accepting apparently good results.

Mr. Spicer had raised the question of a mixed infection and in dealing with sterility the possibility that one had to cope with a mixed infection must not be overlooked. He had seen the first symptom in a herd troubled afterwards with abortion and sterility to be "bull burn." The next thing was that some of the cattle were suffering from vaginitis; then came abortion and finally sterility. It would seem that research work was necessary to differentiate between those lesions and symptoms due to *Brucella abortus*, those due to the causal organism of nodular venereal disease and those lesions of granular vaginitis and, again, those of coital exanthema, or "bull burn."

He was glad that Mr. Spicer had come forward with the evidence about the procedure in the older days. After several years' experience he was sorry to say that he could not place full reliance on the agglutination test. Mr. Spicer also raised the important point that the live vaccine should only be used on fresh animals to be introduced into already infected herds. He thought that was the only possible time when one might be justified in using the live vaccine.

Major Dunkin rather agreed that the evidence went to support the breakdown of the agglutination test, and had asked him for further evidence—he (Mr. Barker) thought that the evidence of Mr. Spicer was quite sufficient. He confused a statement of his, saying that he first blew hot and then cold about the dead vaccine. Mr. Barker thought that they would find that the paper mentioned that the dead vaccine was not so satisfactory for treatment but that it was apparently satisfactory for prevention; an entirely different thing. That was based upon experience, for in several herds where they knew they were dealing with abortion, the rest of the animals were, for prevention purposes, treated with the dead vaccine.

In some herds that had been very satisfactory, but in one particular herd the rest of the animals aborted; therefore he said that it was not satisfactory if one could not get something like 100 per cent. result. In other herds using the dead vaccine as a preventive, it had been entirely satisfactory.

In their herds of cattle in Hereford it was the abortion storm that they feared, for the animals lived out in the open and the infection, once it started, went through the herd like wild-fire. When he said that the dead vaccine was not so satisfactory, he had referred to treatment, and when he said that it was apparently satisfactory and the best yet, that was in regard to prevention. Then Major Dunkin had asked him if he really believed that our methods were ineffective. Well, it might be possible that all the methods they had at their disposal, if used under ideal conditions and with ideal owners, might be effective, but he hesitated to give the opinion that anyone of them could go down to any poor man's place and say "All right, old man, we will clean out your abortion for you."

Mr. Crowhurst had raised the question of the bull. He did not think there was any doubt that the male could harbour the *Brucella abortus* and that a so-affected bull could infect, through his semen, the cows he served. It was comparatively rare to find abortion bacilli in the bull's semen, but that did occur, and it was certain that such a bull did spread the infection to the female.

Mr. Hugh Hogben had stated that the injection of live vaccine cleared up the disease. He thought that there it was rather the choice of terms which was at fault. He had tried to make that clear when he said that theoretically the live vaccine was used for preventing the act of abortion and not necessarily for clearing up the disease. He had tried to point out that animals injected with the live vaccine would be sterile, so that they could not abort.

Mr. Hogben: "In my experience, there has not been a great deal of sterility."

The Chairman: "In my experience, sterility follows it." (Laughter.)

Continuing, Mr. Barker said that he agreed with Mr. Roberts when he said that the first offender was the one to look out for, and that she was the indicator of what one could do in a herd—but he disagreed, of course, when Mr. Roberts said that he would use the live vaccine for it. Even if one did stamp out the act of abortion by the use of the live vaccine, what became of those animals when they were re-sold to go into other herds? They would have the stage set epizootiologically either for the lighting up of the disease in the transferred animal or animals, or for the spread of infection throughout the herd.

He hoped that he had dealt with all the points that had been raised in the discussion, that he had not trodden upon anyone's toes, and that they would accept his sincerest thanks for inviting him to come there. (Applause.)

Personal.

Birth.—Hare.—On February 23rd, 1930, at 70, Holywell Hill, St. Albans, to Joyce, wife of Dr. Tom Hare, a daughter.

Army Veterinary Service.

London Gazette—War Office—Regular Army.

February 18th.—Major J. R. Steevenson, D.S.O., on completion of 28 years' service, is placed on retired pay February 1st.

Movements of Officers.

Major E. C. Bowes arrived home from India on the 17th ultimo, and is now doing duty at the Remount Depôt, Arborfield Cross.

Majors J. Mullany and J. J. Clune arrived home from India on the 20th ultimo, and are now doing duty at Colchester and Woolwich, respectively.

The Veterinary Record.
March 1st, 1930.

Colonial Veterinary Scholarships.

The cynical assumption that Government Commissions are the sepulchres of pressing causes has received striking contradiction in an instance in which the Veterinary Profession is concerned that prompt and effective action shall be taken.

Elsewhere in these columns will be found particulars of the Colonial Veterinary Scholarships which are now offered on the lines of the Lovat Committee's recommendations for a scheme which should enable the Colonial Veterinary Service to be recognised as a first-class Service, attractive to the young man of scientific bent. Next to a wholehearted endeavour to give practical effect to the recommendations of the Committee in regard to the expansion, maintenance and equipment of our starved veterinary training institutions, there is no line of activity which will be more warmly welcomed by our profession than that which seeks to ensure satisfactory recruitment, both in measure and in kind, for that Service upon which the well-being of Colonial Agriculture and the consequent prosperity of every unit of the Empire, is supremely dependent.

The announcement underlines the emphasis laid by the Committee on the temporary nature of this "expedient," as the scheme was frankly characterised, for attracting to veterinary work men who have already received the highest training in general science at a university, and for encouraging men who have already embarked on a veterinary training to develop further the scientific side of their education. The ground for that emphasis is one with which we have every sympathy—that the Colonial Veterinary Service must, in the long run, rely for recruits upon its intrinsic attractions. The granting of scholarships, however, is a measure of proven value, and by no means a mere expedient, in many other educational directions, and the fact that it has the great merit of enlarging the field for the choice of candidates for appointments might well justify its retention as an integral part of the recruiting machinery of the best-conditioned Service.

The establishment of ten scholarships of the value of £250 per annum, tenable at selected institutions for periods varying from one to four years is in itself, however, official recognition that the Service is worthy of being recruited from men of special training, aptitude and ability to perform its highly-specialised duties, and is a hopeful indication that that recognition will be extended to the obvious implication that such men must be granted conditions and emoluments worthy of their type.

Should this be withheld, or long delayed, either the Colonies themselves, following the lead of South Africa, will take the matter in hand at the expense of British graduates, or, with or without scholarships, the existence of those inadequacies to the needs of the veterinary situation in the Colonies, upon which the Lovat Report laid such stress, will remain, to the serious detriment of Colonial Veterinary Science and Agriculture.

The scholarship scheme itself, however, is one which we welcome without reserve, and we trust that its institution may be taken as an indication of determination on the part of Government to proceed further with the great work of putting into effect the recommendations of the Lovat Committee.

Clinical and Case Reports.

Zinc Poisoning in Cattle.

By T. Le Q. Blampied, F.R.C.V.S., Jersey.

With the increasing popularity of asbestos cement sheets for roofing, this case should be of particular interest.

I was called in on February 12th to attend a herd of cattle as they were losing their hair along the spines and down the legs. On closer examination it was found that the hair came away from any part of the body without any resistance.

The herd numbered about 70 animals, and it was at once realised that the only ones affected were those that had been stabled, at different intervals since the beginning of November last, in a new barn that had been erected on the premises to hold about 40 head.

At intervals during the last three months, when attending animals on this estate, my attention had been called by the farm bailiff to the fact that all the animals in this barn were suffering from a mild form of diarrhœa, and were not doing well in spite of being exceptionally well fed, his opinion being that the stable was too cold and that, not being accustomed to water bowls, they drank an excess of cold water.

I have attended this herd for the last ten years, so had no reason to doubt their water supply, but on making further enquiries I discovered that for the new stable the water was being collected from the roof which was of asbestos sheets, collected in a galvanised tank and run through zinc-lined pipes to the water bowls.

Three samples of water were taken :—

1.– From top of tank.

2.—From bottom of tank.

3.—Water from pipes.

Analysis revealed :—

" Chemically, the water in the tank (samples 1 and 2) is of indifferent composition, containing an extremely high proportion of ammonia (four parts per million or ¼ grain per gallon). In sample 3, taken after passing through the pipes (which I understand are of zinc or galvanised iron) leading to the drinking bowls, there is a six-fold increase in the amount of organic matter, and therefore the water as drunk by the cattle is very impure.

" Samples 1 and 2, representing the water in the tank, were slightly alkaline, doubtless due to the fact that they were collected from a uralite roof; such waters have a solvent action on zinc or galvanised iron, but no poisonous metals were found. On the other hand, the water taken from the pipes (sample 3) had lost the alkalinity but had dissolved some 1½ grains of zinc per gallon even after filtering, and the turbidity, about 1 grain of zinc per gallon, remained in solution. No lead was discovered in any of the samples, but zinc is liable to give symptoms of irritant poisoning.

" In my opinion the water is quite unfit for cattle.

(*Signed.*) F. W. Toms, F.I.C."

B.D.H. Universal Indicator dropped on a fresh section of asbestos sheeting showed *p*H 10-11, the extreme alkaline end of the scale.

This affection ran a chronic course. None of the animals has died to date.

Cystic Calculi Top the Century.

By G. S. Walker, M.R.C.V.S., Farnham.

A black spaniel bitch, nine years old, was recently brought to my surgery after two days of labour, during which she had produced without assistance two dead puppies. This was her first pregnancy. Before any help could be rendered she died.

Post-mortem examination revealed one dead fully-formed pup in the uterus, and the bladder was found to contain 108 calculi, varying in size, the largest weighing 4 drachms 52 grains, the total weight of calculi being 2 ozs. 40 grains. They were of a brownish-yellow colour, pyramidal in shape, with smooth surfaces, and hard. Their composition was not determined.

The calculi were doubtless the cause of the dystocia, and to me it was surprising that the bitch was able to rid herself of the two pups.

The owner reported that difficulty in urinating had been noticed, but otherwise the bitch had been healthy.

In view of the somewhat similar components of such calculi and tartar, it is of interest to note that the bitch's teeth were covered with tartar to an extent I have never seen before.

Professor Hobday, in his work on surgical diseases of the dog, records a case where some 84 similar calculi were found in a bitch.

The " Scrub " Bull.

" The position of the ' scrub ' bull is gradually being undermined and menaced. The existence of this class of bull is unquestionably a hindrance to improvement in the quality of the ordinary stock of the country, and if owners of milking herds in particular could be induced to select and use bulls of better breeding and better individual quality there would be improved opportunities for rearing calves of a more responsive description. Sir Merrik Burrell raised the subject again at the Agricultural Council, and the result is the prospect of an agreed measure for the registration of bulls."—*The Times.*

Royal College of Veterinary Surgeons.

Report of the Sub-Committee on the Preparation of a System of Description of Colours and Markings of Horses.

1. The Sub-Committee was appointed by the Council in October, 1928, with the following reference :—

" A letter was received from Dr. A. W. Whitehouse suggesting the appointment of a Committee to prepare a system of descriptions of colours, markings, etc., of animals for identification purposes, and it was resolved :—

(*a*) That the suggestion be approved and that a Sub-Committee be appointed to prepare such a scheme with power to co-opt other members.

(*b*) That the Sub-Committee consist of the President, Colonel J. W. Brittlebank, Messrs. G. P. Male, T. F. Spencer, and J. Willett."

2. Ten meetings have been held, and the following were co-opted additional members :—Messrs. J. Crawford, H. J. Dawes, E. Brayley Reynolds, and Colonel F. C. Stratton. The Sub-Committee has had the advantage of being able to consult Dr. Bradley, Mr. H. Bradley, Mr. R. C. Irving, Professor Macqueen, Professor J. D. Stewart, Mr. W. A. N. Robertson and Professor J. B. Robertson, all of whom have rendered valuable assistance.

3. The Sub-Committee regrets to report the receipt of letters of resignation from Colonel Brittlebank and Mr. Gofton on account of inability to attend the meetings.

4. The Sub-Committee has carefully examined the question relegated to it, and finds that the preparation of a recognised scheme of descriptions of colours and markings of horses is urgently required and that such a scheme would help to remove many difficulties now experienced in connection with both the export and the insurance of horses, where identification is a matter of the utmost importance.

5. Owing to variations in nomenclature of colours and markings in different parts of the country, and in different breeds of horses, descriptions by different persons of the same horse have been found to vary very considerably.

Some of the discrepancies in descriptions of colour are due to the fact that the coat colour is not stable until the end of the first year. To prevent such discrepancies the Sub-Committee advises that for registration purposes foals should be re-examined and the description reviewed at about 12 months of age, any change of colour to be notified.

6. The Sub-Committee has considered the subject in its relation to horses only. If it is desired that a similar scheme should be prepared for other animals, it would be necessary to appoint a Special Sub-Committee.

7. In drawing up the scheme set out below, the Sub-Committee has borne in mind the needs of the veterinary student, believing it to be essential that if the scheme is to be successful, all veterinary students should be taught during their curriculum to describe horses in the manner in which they will be called upon to do in actual practice; for this purpose it is suggested that the routine order of description recommended at the end of the report should be followed.

8. The Sub-Committee recommends that all certificates used by veterinary surgeons for describing horses for registration or export purposes should be accompanied by a diagram similar to that attached, in which markings referred to in the certificate should be indicated as accurately as possible.

9. The Sub-Committee realises that it would be impracticable to insert in the Thoroughbred Record of Ancestry, the General Stud Book, or its Supplements, a full description of markings; but in view of the great advantage which would accrue to breeders, purchasers and exporters of Bloodstock by the establishment and maintenance of a register of descriptive markings, in addition to coat colour,

the Sub-Committee would welcome the establishment of a register containing full descriptions, not only of thoroughbreds, but of all other breeds. If the descriptions were filed by card index, a valuable register would then be made available for reference.

COLOURS AND MARKINGS OF HORSES FOR IDENTIFICATION PURPOSES.

The following list of names of colours and markings is recommended as sufficient. Popular names not included below are recommended to be discontinued.

Name.	*Definitions or remarks for the purpose of instruction of students.*
COLOURS.	
Black.	Where melanistic pigment is general throughout the body coat, limbs, mane and tail, with no pattern factor present other than white markings.
Black-Brown.	Where the predominating colour is black, with muzzle, and sometimes flanks, brown or tan.
Brown.	Where there is a mixture of melanistic and chocolate pigment, without yellow, in the body coat, with black limbs, mane and tail.
Bay-Brown.	Where the predominating colour is brown, wtih muzzle bay; black limbs, mane and tail.
Bay.	Bay varies considerably in shade, from a dull red approaching the brown, to a yellowish colour approaching the chestnut, but it can be distinguished from the chestnut by the fact that the bay has a black mane and tail, and almost invariably has black on the limbs. The following three shades will suffice for descriptions :—
Bay.	(Includes bright bay.)
Dark Bay.	
Light Bay.	(Includes mealy bay.)
Chestnut.	This is a whole colour, of which three shades may be named :—
Chestnut.	Includes bright chestnut, golden chestnut, and red chestnut.
Dark Chestnut.	Includes liver chestnut and mahogany chestnut.
Light Chestnut.	Includes sorrel.
Blue Dun.	Where the colour of the body coat is a dilute black evenly distributed over the body (giving a blue colour), with or without dorsal band (list) or withers stripe. Always a black mane and tail. The skin is black.
Yellow Dun.	Where there is a diffuse yellow pigment in the hair, with or without dorsal band (list), withers stripes, or bars on the legs. The striping is correlated with dark pigment on the head and limbs. When striping is absent the limbs will approximate to the colour of the body coat. The skin is black.
Cream.	Where the body coat is of a cream colour, with unpigmented skin. The iris is deficient in pigment; it may even be devoid of it, giving the eye a pinkish appearance.
Grey.	Where the body coat is a varying mosaic of black and white hair, with the skin black. With increasing age the coat grows lighter in colour. As there are many variations of grey according to age and season, all of them should be described by the general term grey. In horses of this colour any distinctive hoof markings may be useful for purposes of identification.
Roans.	Roans are distinguished by the ground or body colours, all of which are permanent :—
Blue Roan.	Where the body colour is black or black brown, with an admixture of white hair which gives a blue tinge to the coat. The limbs from the knee and hock downwards are black.
Bay or Red Roan.	Where the body colour is bay or bay brown, with an admixture of white hairs, which gives a reddish tinge to the coat. The limbs from the knee and hock downwards are black.
Strawberry or Chestnut Roan.	Where the body colour is chestnut with an admixture of white hairs. The limbs are not black.
Piebald.	Where the body coat consists of large irregular patches of black and of white. The line of demarcation between the two colours is generally well defined.
Skewbald.	Where the body coat consists of large irregular patches of white and of any definite colour, except black. The line of demarcation between the colours is generally well defined.
Odd Coloured.	Where the coat consists of a mixture of more than two colours tending to merge into each other at the edges of the patches, with irregular body markings not classifiable under the head of Piebald or Skewbald.

N.B.—(1) Where there is any doubt as to the colour, the muzzle and eyes should be carefully examined.

(2) The term " whole coloured " is used (*e.g.*, in the Suffolk breeds) where there are no hairs of any other colour on the body, head, or limbs.

MARKINGS.

The variations in markings of horses are infinite, and cannot therefore be comprehended by a limited number of terms without certain arbitrary groupings. In some cases a combination of the terms given below must be resorted to.

Limbs.

White Coronet.	Where the hair immediately above the hoof is white. Describe the situation of the white marking as far as possible.
White Heel.	For the purpose of description of marking the heel is to be taken as the back of the pastern extending to the ergot. Where the white is confined to one or both the bulbs of the heel, it must be so specified.
White Pastern.	For the purpose of description of marking the term " Pastern " is to be taken as extending from immediately below the fetlock joint downwards. Any variation of the extent of the white should be specified, *e.g.*, half pastern, three-quarter pastern.
White Fetlock.	For the purpose of description of marking the term " Fetlock " is to be taken as comprising the region of the fetlock joint and downwards. Any variation of the extent of the white should be specified.
Higher White Markings.	Though the term " Sock " has been in common use for a marking extending to about halfway up the cannon, and the term " Stocking," for a marking up to the region of the knee or hock, these terms have been so loosely used that the Sub-Committee recommends for the sake of greater uniformity and certainty that for white

Name.	*Definitions or remarks for the purpose of instruction of students.*
	markings extending higher than those already defined, the particular height to which the white extends should be precisely stated and any variation in the upper margin noted, *e.g.*, "White to middle of cannon or shank," "White to knee or hock."
	Head.
Star.	Any white mark on the forehead. Size, shape, intensity, position and coloured markings on the white to be specified.
Stripe.	Many terms have been used to describe the narrow white marking down the face, not wider than the flat anterior surface of the nasal bones, *e.g.*, rase, race, rache, reach, streak, stripe, strip, etc. The Sub-Committee recommends for the sake of uniformity that one term only be used, and they select, as being most useful for the purpose, the term "stripe." The stripe may be a continuation of the star, or it may be separate and distinct from it. Where there is a star and the stripe is not continuous with it, the stripe should be described as "interrupted stripe"; and where star and stripe are continuous, as "star and stripe conjoined"; where no star is present the origin of the stripe should be defined. The termination of the stripe and any variation in breadth, length, direction and coloured markings on the white should be described, *e.g.*, "broad stripe," "narrow stripe."
Blaze.	A white marking covering almost the whole of the forehead between the eyes, and extending down the front of the face, involving the whole width of the nasal bones. Any variation in direction, termination and coloured markings on the white should be described.
White Face.	Where the white covers the forehead and front of the face, extending laterally towards the mouth. The extension may be unilateral or bilateral, in which cases it should be described accordingly.
Snip.	An isolated white marking, independent of those already named, and situated between, or in the region of the nostrils. Its position should be specified.
Lip Markings.	Should be accurately described, whether embracing the whole or a portion of either lip.
White Muzzle.	Where the white embraces both lips and extends to the region of the nostrils.
	Eyes.
Wall-Eye.	This term should be used exclusively where there is such a lack of pigment in the iris as usually to give a greyish-white or bluish-white appearance to the eye. Any other important variations from the normal colour of the iris should be noted.
Showing the White of the Eye.	Horses which "show the white of the eye" should be so described.
	Body.
Grey-Ticked.	Where isolated white hairs are sparsely distributed through the coat in any part of the body.
Flecked.	Where small collections of white hairs occur distributed irregularly in any part of the body. The degree of flecking may be described by the terms "heavily flecked," "lightly flecked."
Black Marks.	This term should be used to describe small areas of black hairs on white or any other colour (see "Ermine Marks").
Spots.	Where small, more or less circular, collections of hairs differing from the general body colour occur, distributed in various parts of the body. The colour of the spots must be stated.
Patch.	This term should be used to describe any larger well-defined irregular area (not covered by previous definitions) of hairs differing from the general body colour. The colour, shape, position and extent should be described.
Zebra Marks.	Where there is striping on the limbs, neck, withers or quarters.
Mane and Tail.	The presence of odd-coloured hairs in mane and tail should be specified.
Ermine Marks.	This term is used to describe black points on white, usually occurring on the coronet, but as this marking can easily be described as "Black Marks," it is recommended that the use of the word "Ermine" be discontinued.
Dappled.	The Sub-Committee recommends that this term be discontinued, as it is a seasonal and not a permanent marking.
	General.
Mixed.	The term "Mixed" should be used to describe a marking consisting of the general colour mixed with many white or lighter coloured hairs.
Bordered.	To be used where any marking is circumscribed by a mixed border, *e.g.*, bordered star, bordered stripe.
Flesh Marks.	Patches where the Pigment of the skin is absent should be described as "Flesh marks."

NOTES.

1. **Adventitious Marks.**—There are many adventitious marks (*i.e.*, **not** congenital marks) which are permanent, *e.g.*, saddle marks, bridle marks, collar marks, girth marks, and other harness marks, permanent bandage marks, firing and branding marks, scars, tattoo marks. Wherever these occur they should be described. Horses that have been docked should be so described.

2. **"Near and Off."**—As the terms "near" and "off" are not recognised abroad, it is recommended that in certificates referring to horses for export, an explanatory note defining "near" as "left," and "off" as "right," should be inserted at the foot of the certificate.

ROUTINE.

It is recommended that the following order of examination should be adopted:—

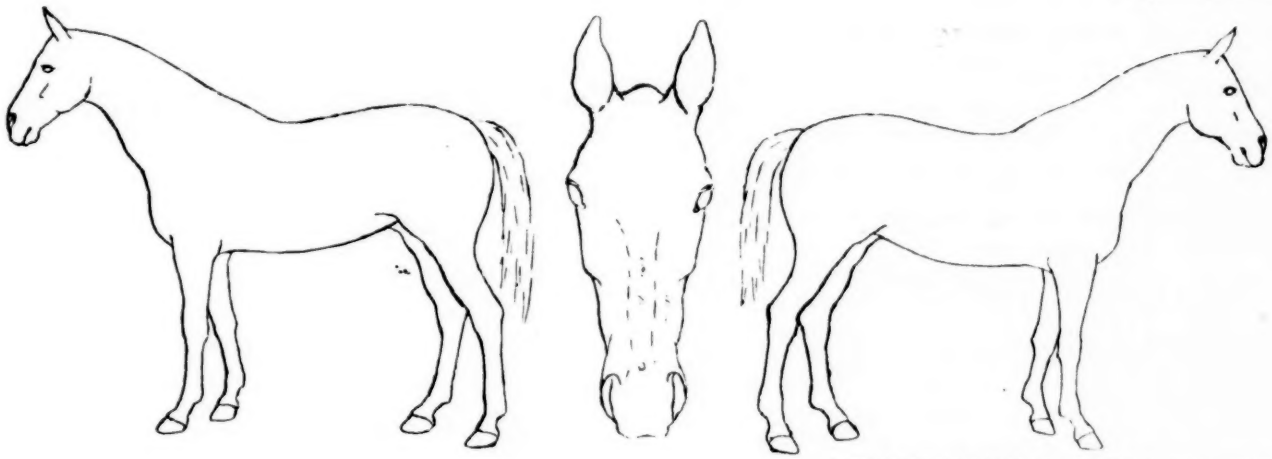
Colour.
Breed.
Sex (see "A.").
Age.
Marks on head (including eyes) in the order shown.
Marks on limbs, fore first, then hind, commencing from below.
Marks on body.
Remarks on mane and tail.
Adventitious or acquired marks.

"A."—Where the horse has a registered name, it should be inserted here, followed by name of sire and dam.

Suggested Form of Certificate for Registration or Export.

Certificate of Examination.

No......



WHITE MARKINGS SHOWN IN RED.

ANIMAL.	COLOUR.	BREED.	SEX	AGE.	HEIGHT.

SIRE.	DAM.	SIRE OF DAM.

MARKINGS.

HEAD .....

.....

LIMBS .....

.....

.....

.....

BODY .....

ACQUIRED.....

REMARKS :—.....

.....

.....

DATE .....

ADDRESS ..... R.C.V.S.

.....

N.B.—" Near " = left : " Off " = right.

The fore-going report is obtainable in reprint form from the offices of the N.V.M.A., 10 Gray's Inn Square, London, W.C.1, price 4d., post free.

Veterinary Thanksgiving Fund.

Final List.

	£	s.	d.
Dumfries and Galloway V.M.A.	3	14	6
Major A. N. Foster, F.R.C.V.S., Uganda ...	1	1	0
J. S. Watt, M.R.C.V.S., D.V.S.M., Transvaal ...	1	1	0
Yorkshire V.M.A.	5	5	0
	11	1	6
Previously reported on August 17th, 1929 ...	140	7	0
	£151	8	6

Total Amount Received.

	£	s.	d.	£	s.	d.
Subscriptions from individual members	130	2	0			
Subscriptions from Divisions of N.V.M.A.	21	6	6			
				151	8	6
Donation from Mr. Warwick Fowle, M.R.C.V.S.				130	2	0
Major F. Hopkin, M.R.C.V.S., Manchester				2	0	0
				£283	10	6

We are now permitted to mention that the anonymous donor referred to in the Appeal for this Fund is Mr. Warwick Fowle, M.R.C.V.S., who promised to make a donation of £100, if a similar sum were subscribed by other members, to form a Thanksgiving Fund to commemorate the recovery of His Majesty the King from his serious illness, during the year 1929. The actual sum contributed by Mr. Warwick Fowle is £130 2s. The total amount available for distribution, therefore, as shown in the audited statement given below, is £280 8s. 9d. With the concurrence of Mr. Warwick Fowle, it has been decided, after deduction of incidental expenses, to divide this sum as to two-thirds to the Victoria Veterinary Benevolent Fund and one-third to the National Veterinary Benevolent and Mutual Defence Society.

J. W. Brittlebank.
Fred Bullock.

Final Account.

	£	s.	d.
Subscriptions from individual subscribers ...	130	2	0
Donation from Mr. W. Fowle	130	2	0
Subscriptions from Societies	21	6	6
Subscription received after closing books (Major F. Hopkin)	2	0	0
	£283	10	6

	£	s.	d.
Printing, etc.	3	1	9
V.V.B. Fund	186	19	2
N.V.B.M.D. Society	93	9	7
	£283	10	6

We, the undersigned, have checked the receipts with the Pass Books, and have satisfied ourselves that the above account is a correct statement of account and that the amount has been distributed in the manner stated.

E. Alfred West,
P. J. Simpson. } *Hon. Auditors.*

From The Veterinarian,

January, 1830.

Cases of Neurotomy.

By Mr. Edward Rickman, V.S. to the So. Salopian Yeomanry Cavalry.

Gentlemen,—It was with great pleasure that I read Mr. Castley's letter *on the Navicular Disease and Nerve Operation,* in your last number; as I am one of those who think the operation ought not to be discarded, and, when proper cases are selected, the veterinarian will not fail in giving satisfaction to his employer, and will reflect credit upon himself.

I have been in business in Shrewsbury nine years, during which time I have operated upon nine horses, and which have done exceedingly well, particularly three of that number.

Case I.

A Bay gelding, five years old, the property of Mr. Wheeler, of the Raven Inn, in this town, became suddenly lame upon the near fore leg, without any apparent cause; his foot was examined, and every means were taken to ascertain the cause of his lameness; he was repeatedly blistered round the coronet, and turned out for three months, at the expiration of which time I saw him, and he was then so lame that he could scarcely walk into the stable. I recommended the operation of unnerving, but Mr. Wheeler had a great aversion to it; and it was some time before I could prevail upon him to allow me to do so. I at length operated upon him below the fetlock, but, from some motive or other which I now cannot account for, I only took out about a quarter of an inch of the nerve. The horse got up perfectly sound, and in a short time afterwards Mr. Wheeler put him in harness, and used him as a post horse for 12 months, when he again became lame; it then occurred to me, from the very small portion of nerve which I had taken out, that the nerve might have united, and I again operated upon him upon the fetlock joint, and removed rather more than an inch; he got up perfectly sound, and worked as a post horse for nearly three years, when he met with an accident on one of his hind legs, and was shot.

Case II.

Was a very beautiful chestnut horse, then six years old, the property of a farmer in the neighbourhood, who had refused 100 guineas for him. He had very good circular feet, but rather strong; he became a little lame in both, but rather more so in the near one. The farrier who attended him used every means to get him sound, such as paring the soles, blistering his coronet, etc., and finally, I believe, he fired him from his hoofs up to his knees; he was then turned out for six months, and came up worse than when sent out. The proprietor became quite tired of having him *farriered* any longer, and was determined to sell him for what he would fetch.

Mr. Robert Wilding, a friend of mine, related the case, and wished my opinion respecting the operation of unnerving. I advised him to buy the horse, which he did for £12, and I operated upon both legs below the fetlock joint; the horse got up quite sound, and Mr. Wilding, who is a very superior horseman, rode him two seasons with the Shropshire hounds, and whenever they had a run he was always in front. At the end of one very long

run, Mr. Wilding so far distinguished himself that a gentleman offered 200 guineas for him, but Mr. Wilding would not warrant him sound, consequently the bargain was not concluded. He was afterwards sold as a nerved horse to a Mr. Gittins, for very little short of 60 guineas, who rode him two years with Sir Richard Puleston's hounds; and the last time I heard of him was, when a gentleman told me he saw Mr. Gittins ride him over a very high park fence, near Sundorn Castle. He had then been operated upon four years, and went perfectly sound. This horse was considered one of the most brilliant leapers that was ever put to a fence.

Case III.

Was a large brown horse, seven years old, belonging to a medical gentleman at Wenlock, in this county. This horse had very good feet, although rather strong. In the summer, which was a very hot one, he became lame on the near fore leg, and every means were taken to discover the cause of his lameness; he was bled in the toe, a seton passed through the frog; blistered on the coronet; had several doses of aloes, etc., all to no purpose; he was then turned to grass for several months, and, like the chestnut horse, came up worse than when he went out.

Mr. Humphreys, a grocer of this town, then bought him for £10, and I operated upon him below the fetlock joint; he got up quite sound, and the wounds were so very nicely healed that no one could discover he had been unnerved. Mr. Humphreys, a short time after, made an exchange with a gentleman for a horse which he (Mr. Humphreys) sold for £70. The gentleman, I believe, drives the horse which I unnerved in his gig up to this day, perfectly sound. The other six cases all did remarkably well, and worked for several years.

Obituary.

Lieut.-Colonel S. F. G. Pallin, D.S.O.

It is with regret that we have to announce the death of Lieut.-Colonel S. F. G. Pallin, D.S.O., retired pay, late Royal Army Veterinary Corps, which occurred very suddenly at Southern Cross, Shaldon, South Devon, on February 18th, 1930, at the age of 51 years. Lieut.-Colonel Pallin had been in ill-health for some time.

The deceased officer graduated in London on July 18th, 1901; was gazetted to the Royal Army Veterinary Corps in the rank of Lieutenant on May 16th, 1903; promoted Captain May 16th, 1908; Major on July 10th, 1915; placed on retired pay on account of ill-health and granted the rank of Lieut.-Colonel on July 13th, 1929.

Lieut.-Colonel Pallin served in France, Italy, and Mesopotamia, during the Great War; was three times mentioned in Despatches, and awarded the D.S.O.; also served in the South African War as a Civilian Veterinary Surgeon. He was awarded the following Medals:—Queen's Medal with five clasps for South Africa; British War Medal, Victory Medal, and Iraq Medal and Clasp for Great War.

During his service, Lieut.-Colonel Pallin held several administrative appointments, the chief of which were Assistant Director of Veterinary Services, 15th Scottish Division and Assistant Director of Veterinary Services, at General Headquarters in Italy.

Lieut.-Colonel Pallin leaves a widow and two young children, to whom all officers of the Corps tender their deepest sympathy in their sad loss.

Divisional Report.

South-Eastern Division, N.V.M.A.

Annual Meeting at Tunbridge Wells.

An outstandingly-successful meeting of this Division was held at the Castle Hotel, Tunbridge Wells, on Thursday, January 30th, 1930, the occasion being rendered noteworthy, not only by reason of the election of officers for the ensuing year, but because of the excellence of a paper (by Capt. J. R. Barker, of Hereford) and discussion on the very "live" topic—"Are the present methods of combating contagious abortion effective?"

The President (Mr. Henry Taylor, of Hayward's Heath) occupied the chair, and there were also present, Mr. J. G. Cattell, Mr. F. Crowhurst, Major T. Dalling, Major C. Rose, Messrs. J. B. Dier, H. Gooch, W. D. Halfhead, H. S. Head, H. P. Hogben, F. Marks, J. H. Mason, C. W. Perrin, J. W. Pritchard, A. Spicer, C. Roberts, A. Whicher and W. S. Gordon (Hon. Secretary).

Visitors.—Dr. W. H. Andrews, Mr. J. R. Barker and Mr. A. D. McEwen.

The minutes of the previous meeting, having received publication in the *Record*, were taken as read and were confirmed and signed.

Arising out of them, the Hon. Secretary reported that he had forwarded to the Secretary, N.V.M.A. the findings of their last meeting following upon their discussion of the suggestions made at the Ayr Congress of the Association as to the grading of milk and the designation of those grades. He had also forwarded to the Secretary of the Scottish Branch, N.V.M.A., the resolution then passed relative to the West of Scotland scheme for the eradication of tuberculosis.

Correspondence.

(1) From Mr. E. P. Barrett, Major G. W. Dunkin, Capt. F. C. Gillard, Mr. J. W. N. Hinton, Mr. T. F. Hogben, Mr. E. Morgan and Major L. P. Pugh, regretting their inability to attend the meeting.

(2) From Messrs. W. W. Gulleford (Market Drayton) and David Pugh (Sevenoaks) resigning membership, the former on the ground of ill-health and the latter because he found himself unable to attend the meetings.

The Hon. Secretary informed the members that he had written, on behalf of the Division, expressing their sincere sympathy with Mr. Gulleford in his illness. The meeting decided to accept Mr. Gulleford's resignation, with regret.

In regard to Mr. David Pugh, who has been a member of the Division for many years, it was agreed to request him to reconsider his decision.

(3) From the Hon. Secretary of the Eleventh International Veterinary Congress, inviting the Division to appoint delegates to this Congress, to be held in London in August.

The President and Mr. Hugh P. Hogben were unanimously elected to represent the Society.

(4) From the Secretary of the Royal Sanitary Institute, inviting the appointment of a representative to the Congress of the Institute, to be held at Margate from June 21st to 28th, 1930. Mr. E. P. Barrett, of Margate, was appointed as delegate.

Nominations for Membership.—The following gentlemen were nominated for membership of the Division:—Mr. A. Eccles, of the Ministry of Agriculture, stationed at Weybridge, and Mr. A. D. McEwen, of the Wye Agricultural College, Kent.

Election of New Members.—The following were unanimously elected to membership:—Miss E. Gertrude Knight (Dorking), Mr. A. Cornish Bowden (Beckenham), Mr. S. F. J. Hodgman (Sevenoaks) and Mr. J. H. Mason (Beckenham).

HON. SECRETARY'S REPORT.

Mr. W. S. GORDON presented his report for the year 1929, as follows:—

"During the year 1929 there have been three meetings of the Division:—

"*The Annual General Meeting and Dinner* took place on January 16th, and was made memorable by the tribute paid to Mr. Hugh P. Hogben on his retirement from office as Honorary Secretary after a period of long and enthusiastic service extending to nearly 20 years. A paper was presented by Mr. A. Spicer, of Oxted, entitled 'Milk Fever and Nervous Forms of Distemper and Hysteria in Dogs.' This paper suggested a new theory as to the cause of milk fever and much valuable information was brought out in the discussion.

"*The Summer Meeting* was held on June 6th, at Tunbridge Wells, by kind invitation of Mr. Charles Roberts, who lent his premises for surgical demonstrations and afterwards entertained the members to tea. Surgical demonstrations were given by Mr. O. Stinson, of Appleby, and Mr. G. P. Male, of Reading. Mr. Male demonstrated the transplanting of ovaries in the bitch and Mr. Stinson, operations on the teat. The operations were skilfully carried out and, judging by the amount of discussion which followed, were greatly appreciated.

"*The Final Meeting* was held at the Royal Star Hotel, Maidstone, on October 30th, and several important subjects were discussed. The present designations of graded milk were criticised and a resolution suggesting an alteration in the present nomenclature was forwarded to the Council of the N.V.M.A. for their consideration. The scheme for the eradication of bovine tuberculosis put forward by the West of Scotland Division, N.V.M.A., received consideration, and after considerable discussion it was unanimously agreed that the South Eastern Division of the N.V.M.A. accept the principle of the scheme, and the Secretary of the West of Scotland Division was notified of this decision.

"Major Dalling, of the Wellcome Research Laboratories, initiated a discussion on the results of the new method of prevention of canine distemper, and many members contributed their experiences with the new vaccine.

"There are now three honorary members and 38 members of the Association. This is not a large number of members for such a large area as this Division represents, and by a very little effort on the part of the present members I feel sure that this number could be greatly increased."

The report was accepted and adopted, as was Mr. Gordon's statement in his capacity of HON. TREASURER, which disclosed a satisfactory financial position.

Victoria Veterinary Benevolent Fund.—It was unanimously agreed, on the proposition of Mr. ROBERTS, seconded by Mr. MARKS, to renew the Division's subscription of £3 3s. to this Fund, and, if circumstances rendered it possible, later in the year to give a donation of £4 4s., as was done in 1929.

ELECTION OF OFFICERS.

President.—In proposing the re-election to this office of Mr. Henry Taylor, the HON. SECRETARY said that Mr. Taylor had carried out his onerous duties with great ability during the past year. They all knew that their President had the interests of the Society very much at heart; he did a great deal of excellent work for it and they could not get a more enthusiastic or more capable President. (Applause.)

Mr. ROBERTS seconded the proposal, which was carried with acclamation, Mr. Taylor, returning thanks for the honour, said that it was a pleasure to him to preside over their deliberations, while the onerous duties of the office were really carried out by the Hon. Secretary. (Laughter.) He hoped that, with heir kind co-operation, the Society would have another successful year. (Hear, hear.)

Vice-Presidents.—Messrs. Hguh P. Hogben (Senior Vice-President), C. Crowhurst, F. Crowhurst, and E. Ebbetts.

Council.—Messrs. J. G. Cattell, A. T. Crowther, T. Dalling, J. B. Dier, F. C. Gillard, T. F. Hogben, F. Marks, E. Morgan and C. Roberts.

Hon. Secretary and Treasurer.—Mr. W. S. Gordon was re-elected. The President, in proposing from the chair Mr. Gordon's re-election, paid a warm tribute to his efficiency and enthusiasm in his dual capacity.

Auditors.—Messrs. C. W. Perrin and A. Whicher (re-elected).

Representatives on the Council, N.V.M.A.—Major G. W. Dunkin (*ex officio*) and the Hon. Secretary.

Representative on the Council of the Victoria Veterinary Benevolent Fund.—Mr. A. Whicher (re-elected).

Contagious Abortion Paper and Discussion.—The President now called upon Capt. J. R. Barker, of Hereford, to read his paper, and the well-sustained and viggrous discussion which followed was opened by Dr. W. H. Andrews, Director of the Ministry of Agriculture's Laboratory at Weybridge. [Both paper and discussion are reproduced earlier in this issue of the *Record*.—ED.]

At the conclusion of this section of the proceedings, Capt. Barker was accorded a hearty vote of thanks for his paper which, in the words of the President, had "produced so provocative a discussion."

It was agreed to leave in the hands of the Hon. Secretary the arrangements for the next meeting of the Division. After tending to the President their thanks for his conduct of the meeting, the members concluded a thoroughly-enjoyable programme by taking tea together.

W. S. GORDON, *Hon. Secretary.*

Foot-and-Mouth Disease: Hay and Straw used for Packing.

The Ministry of Agriculture and Fisheries calls the attention of traders and all others concerned to the requirements of the Foot-and-Mouth Disease (Packing Materials) Orders of 1925 and 1926, which:—

(*a*) prohibit hay or straw from any source which has been used for packing purposes from being brought into contact with animals in England, Wales or Scotland;

(*b*) provide that such hay or straw shall not be removed from any premises, except used as packing or for the purpose of destruction or of being returned in a crate or box to the sender for further use as packing;

(*c*) require that if such hay or straw is not so used again or returned to the sender for further use as packing it must be destroyed;

(*d*) provide that no cloth, wrapping, sacking or other material which has been used for or in connection with the wrapping of meat, meat products, offals or other parts of a carcase shall be brought into contact with animals unless and until it has been boiled or otherwise thoroughly sterilised after being so used; and

(*e*) prohibit any box, crate, basket or other receptacle used for the carriage of meat, meat products, offals or other parts of a carcase (except cooked or preserved meats or meat essences) from being brought into contact with any animal in England, Wales or Scotland.

The Orders apply to all material of the character specified, ***whether of foreign or home origin,*** inasmuch as it is impossible in practice to distingush between the two classes in enforcing Orders of this character.

Central Provinces Veterinary Association.

Sixth Annual Conference.

The Sixth Annual Conference of the Central Provinces Veterinary Association was opened by the Hon. Mr. S. B. Tambe, the Governor-Designate of the Central Provinces, India, in the Agricultural Research Institute, Nagpur, on Saturday, November 9th, 1929.

Major R. F. Stirling, I.V.S., Director of Veterinary Services, Central Provinces, and the President of the Association, welcomed the guests and the Hon. Mr. Tambe, in declaring the Conference open, said that the history of the Association was very interesting and promising. The Association was formed five years' back and the number of members on the roll and in attendance at the conference had steadily increased. The promoters of the association were to be congratulated on the success which it had achieved in such a short time. They had very wisely decided not to allow service matters to be ventilated at the conference, but to confine the discussions to professional subjects only. It was essential that the former should not be allowed to interfere with the latter and their wise decision had permitted them to use all their time at the conference in imbibing and imparting professional learning.

That province was mainly agricultural and their agriculture depended on cattle. Cattle were, indeed, a part of the wealth of the province and they played a very important part in preserving it. The damage done by cattle-diseases was immense, and the poverty of the cultivator could, to a large extent, be attributed to the loss of his cattle. Improvement of the condition of the cultivator was sure to lead to the material improvement of the country generally. They would, therefore, in no small measure, though indirectly, be advancing the material prosperity of the country if they were helpful in preserving in good workable condition the live stock of the agriculturist.

The agriculturist, as they were aware, was not yet very favourably inclined to avail himself of their aid and assistance, and in making their department more popular they would be furthering the interests of their profession also. At present there was no scope for private veterinary practitioners in rural areas; even in the towns in the provinces there were hardly any private practitioners, but as the usefulness of veterinary aid became recognised, the demand for it would increase.

They must not confine their vision to the direct results of their work only; they must think of the important consequent benefits which they conferred on the general public, not supposing that their responsibility ceased with treating their patients or taking measures to prevent or check the spread of contagious disease.

Mr. R. V. Pillai, Officiating Deputy Director of Veterinary Services, Central Provinces, and the Chairman of the Association, proposed a vote of thanks to the Hon. Mr. Tambe and also thanked the many visitors who attended.

The gazetted officers of the Veterinary Department, who were "At Home" for the evening, served a sumptous repast to the accompaniment of the local Police Band.

Mrs. R. F. Stirling, assisted by the Entertainment Committee, made all the arrangements for the "At Home," which was a great success.

The Conference held three sittings on the succeeding days and discussed a number of important papers. The following were some of the contributions:—

1.—"The Responsibility of the Veterinary Surgeon to the State." By Major R. F. Stirling.

2.—"Trypan blue—its uses and abuses." By Mr. R. V. Pillai.

3.—"Veterinary evidence and how to give it." By Mr. Kashi Prasad.

4.—"New thoughts on Serum Simultaneous method of inoculation against Rinderpest." By Mr. P. S. Nair.

5.—"Rinderpest in Ramtek Thasil." By Mr. Gopalakrishnan, and a number of clinical notes by various authors.

On each day, besides discussion on papers, practical demonstrations were arranged both in the Veterinary Laboratory and the Local Veterinary Dispensary. The testing for purity of a sample of milk obtained at random from the bazaar was keenly taken up by the members present and the test resulted in the detection of 8½ million bacteria per 1 c.c. of milk. The intravenous injection of drugs in various animals, the examination of the foot and the detection of obscure lamenesses were the subject of practical consideration by the delegates.

On November 11th, 1929, at 11 a.m., the members ceased work and assembled together to spend two minutes in solemn prayer in memory of those who fell in the Great War.

In review, it was seen that the three days' meeting, where the younger as well as the older members vied with each other in imparting and receiving professional knowledge for the common good of all concerned, had been an outstanding success.

Veterinary Research and Teaching.

"Reference has been made before in these columns," says the Agricultural Correspondent to *The Times*, "to the urgent need for improved facilities for veterinary research and teaching. The Royal Veterinary College at Camden Town is falling into a state of dilapidation, while the stock-owners of the country are calling loudly for more qualified veterinary surgeons, combined with such wider and deeper researches into the numerous diseases that afflict their animals as would improve the position both as to preventive and curative methods of treatment. The present condition is not only anomalous, but its continuance cuts at the very root of all schemes designed for raising the standard quality of our live stock. Sir Arthur Hazelrigg put the case for greater and immediate attention to this matter very forcibly at the recent meeting of the Council of Agriculture, and it is to be hoped, in the best interests of the farming industry, that the subject will have the practical, as it, of course, has the sympathetic, support of the Government. Sir Arthur was fully entitled to suggest, as he did suggest, that veterinary research and the suitable training of veterinary surgeons were of more urgent importance than the appointment of additional county organizers. As the need for more organisers appears to have arisen it may well be supplied, but it is right to view these questions in a correct perspective, and if this procedure be observed there can be no doubt as to the prior claims of the health of our herds, flocks, and studs. The one subject is basic and the other largely administrative. In the absence of sound understanding of disease and even of minor ailments, the value of the class of work undertaken by organizers is likely to be heavily discounted."

The Warble-fly Campaign.

The warble fly is found in all parts of Great Britain, and farmers are well aware of the trouble caused to their cattle when the fly is on the wing, interfering with grazing and rest as it seeks to lay its eggs on the hair of the legs of the animals. "Gadding," which in the case of dairy cows also affects the milk, is only one of the sources of worry and loss caused by the pest. The presence of the warbles under the skin of the back damages the underlying flesh and results in what the butchers call "licked" beef, the damage varying according to the number of parasites in the beast. The hides also are seriously damaged by the puncture which each warble makes as a breathing pore, and through which it emerges when its life cycle in the animal is complete. Tanners and many users of leather suffer considerable loss by these damaged hides.

These considerations caused the Ministry to appoint a Committee to investigate the problem of the pest. It reported in 1926 and advised alternative methods which should result in destroying a high percentage of warbles at or about the time of their emergence. On these recommendations and otherwise many farmers have treated their animals for the destruction of warbles, and have reduced the infestation of their herds. Individual measures, however, can only be partially successful, as re-infestation will occur from neighbouring herds. *Joint action by all farmers in an area is therefore important if the best results are to be secured.*

A campaign on a national basis is now being planned by a Committee, appointed by the Leathersellers' Company and comprising representatives of all the industries interested in the subject and some of the County Councils. It is intended that operations against the parasite shall be begun during the coming season. The enormous annual loss caused by the parasite can, the Ministry is convinced, be mitigated by an effort on the part of stock-owners to clear the warbles out. It can be done at very small expense, chiefly that of cost of insecticides, as advised in the campaign. The Ministry hopes that the activities of the Committee will be strongly supported by the farmers.

A leaflet on the life history, etc., of the Warble Fly may be obtained free on application to the Secretary, Ministry of Agriculture and Fisheries, 10 Whitehall Place, London, S.W.1. Other literature is obtainable from the Honorary Secretary, Leathersellers' Warble Fly Committee, Leathersellers' Hall, St. Helens Place, London, E.C.3, and farmers may also consult the Agricultural Organiser of the County Council.

Food Value of Milk.

An experiment in which 10,000 Lanarkshire school children are participating is being carried out by the Lanarkshire Education Authority. The experiment, which will extend over four months, has a double object. It is intended to test the food values for growing children of the higher grades of milk, and at the same time incidentally to help to ameliorate the distress prevalent in the mining areas in the county.

Each day at 11 a.m., 5,000 pupils will receive a special ration of three-quarters of a pint of raw grade A milk and another 5,000 will receive a similar quantity of pasteurized milk. Periodically the weights and measurements of the children will be taken, and in order to obtain comparisons the weights and measurements of 1,000 other children who have not been so treated will be taken. .

One-third of the children who have been selected to receive the milk ration will come from distressed homes, but the other two-thirds will come from homes where the father is in employment. The cost of the experiment is estimated at £9,000, but none of this will fall on the ratepayers. Five thousand pounds is being contributed by the Empire Marketing Board, £2,000 comes from the balance of the Scottish Miners' Distress Fund, and the remainder from other outside sources. Some time ago Glasgow Education Authority carried through a similar experiment, but on a much smaller scale.

Colonel Irvine-Smith's Work at Johannesburg.

The Sun and Agricultural Journal of South Africa, in a recent issue, pays a tribute to the stock market organisation ability of Johannesburg veterinarian Market Director. Says the paper's Special Correspondent:—"At many stock markets you can still see and be greatly irritated by the veritable pandemonium that occurs with barking dogs driving pathetic and frightened sheep from the off-loading banks into their pens. But at Newtown all these preliminary operations are conducted quickly and quietly by means of 'leader' goats. The Director of the Livestock Market (Colonel Irvine Smith) frankly admits that he got this idea by watching some old Boer farmers when he first came to South Africa.

"It is of interest to know that the other day a well-known Australian cattle rancher and sheepman visited Newtown and stated that he had not seen any livestock market in the Commonwealth better laid out or on more up-to-date lines than that possessed by the Johannesburg Municipality. It is worthy of note that in the period from July 1st, 1928, to June 30th, 1929, the total number of animals passing through the livestock market was 1,122,139 of an approximate value of £4,077,520, while the total number of animals slaughtered in the abattoir was 566,870.

"The livestock markets of Johannesburg are undoubtedly proving a powerful factor in the upbuilding of our agricultural prosperity. Year by year the South African farmer is realising the benefit of these markets and abattoirs, which are the outcome of his confidence in the service rendered. The Director (Colonel Irvine Smith) has spent 22 years in the practical study of livestock from every point of view, and he has visited the principal markets of the world, including Europe, North and South America. It must be a source of satisfaction to the citizens of Johannesburg to know that their livestock market can stand comparison with the finest in the world to-day."

Hereford Cattle for Africa.

The Union Government of South Africa have for some time been experimenting and investigating, through their veterinary branch, the advantages, if any, of introducing phosphates and chemical and manurial matter into the feed of cattle to supply the lack of those substances in the natural grasses of South Africa.

It is probably this lack which accounts for the primest of British cattle imported into that country deteriorating in the course of a few generations, by getting leggy, losing their prime quality, and their early maturity.

One of their chief veterinary officers, Mr. Bischop, recently visited Herefordshire. He purchased ten pedigree Hereford heifers, the White-faced breed having been selected for the experiment. The heifers are now on their way to South Africa.

National Pony Society.

At a meeting of the Council of the National Pony Society, Colonel Cecil stated that a very good entry had been obtained for the National Pony Show at the Royal Agricultural Hall, on Friday and Saturday, March 7th and 8th, and that it was evident that all breeds and types of British Ponies would be represented.

The question of the admittance of thoroughbreds in the National Pony Stud Book was very carefully considered by the Council, and it was resolved that in future stallions entered in the General Stud Book not less than five years old, measuring not less than 15 hh. passed as suitable by two judges duly appointed, be eligible for admission to the National Pony Stud Book.

It was decided to appoint a sub-committee to investigate the question of whether the Society's encouragement of pony racing under the rules of the Pony Turf Club would prove advantageous to polo pony breeders.

Notes and News.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Mar. 3rd.—Meeting of the Editorial Committee, N.V.M.A., 4.30 p.m., at 10 Grays Inn Square, W.C.1.

Mar. 6th—Meeting of the Central Division, N.V.M.A., at 10 Red Lion Square, London.

Mar. 7th.—Annual Dinner of the Lancashire Division, N.V.M.A., at Liverpool.

"A System of Description of Colours and Markings of Horses."

The attention of our readers is directed to the fact that copies of the above Report, as approved by the Royal College of Veterinary Surgeons, and which is reproduced elsewhere in this issue, are obtainable from the Offices of the N.V.M.A., 10 Gray's Inn Square, London, W.C.1. Price 4d., post free.

Parrot Disease in Denmark.

"The mysterious 'parrot disease,' cases of which were recently recorded in Germany and Central Europe, has now reached Copenhagen, with the S.S. Louisiana, of the United Steamship Company, from Brazil," says the Copenhagen Correspondent of *The Observer*. "Various members of the crew had bought parrots in Brazil with the intention of selling them in Copenhagen, but a number of the birds fell sick and died during the voyage. When the Louisiana arrived in Copenhagen, four of her crew were confined to their beds with high fever, and on the following day two more were taken ill. The doctors say that the disease resembles typhus, but that the lungs also are affected.

"A Royal Decree has been issued to the effect that the quarantine regulations applicable in cases of cholera and plague shall also, in future, apply where parrot sickness is concerned, and it is stated that another decree will be issued prohibiting the importation of parrots into Denmark."

. . . . .

With a view to the prevention of psittacosis, the importing of parrots into France has been forbidden.

Re-enforcement of Uruguayan Veterinary Service.

Col. Dunlop Young has been informed that the Uruguayan Government has issued the following instructions, *viz*:—That 15 additional Veterinarians be at once appointed, and this personnel must solely dedicate their activities to the prevention of, or war against, foot-and-mouth disease and caseous lymphadenitis, to re-enforce the personnel of the Veterinary Services of the freezing establishments in the country at an additional cost of $45,000* annually, and that the laboratory expenses of the Bacteriological Instiute of the Veterinary School be increased by $4,800 annually.

Dr. Pedro Seoane, Chief of the Animal Industry Section of the Veterinary Services Organization, is at present in London and is to visit the Continent in order to observe the system of Veterinary Control of Animal Diseases and Veterinary Meat Inspection.

* The gold dollar equals 3s. 9d.

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

The Victoria Veterinary Benevolent Fund.

To the Editor of the Veterinary Record.

Sir,—At the quarterly meeting of the Veterinary Medical Association of Ireland, held in Dublin and reported in the current issue of the *Veterinary Record*, Mr. P. J. Howard, supported by Professor O'Connor, made an intensive appeal to all those present, and to absent ones, to become members of The Victoria Veterinary Benevolent Fund, remarking how sorely in need of funds this Society was.

I cannot help thinking what a help it would be to the Fund if others at their meetings would emulate this example by saying a few words of the same nature, because local influence is at all times so valuable.

The expenses of the Fund exceed its income, and if only more members would join, the present necessity of being obliged sometimes to refuse aid when it should be given would be agreeably obviated.

Yours faithfully,
E. Alfred West.
Hon. Treasurer.

81 Grays Inn Road,
London, W.C.1.
February 22nd, 1930.

Ragwort Poisoning.

To the Editor of the Veterinary Record.

Sir,—In to-day's issue of the *Record*, your leading article and the admirable paper of Professors Craig and Kearney and Mr. J. F. Timoney refer to the work of the late Sir Stewart Stockman and of Mr. W. J. Leyshon on ragwort poisoning.

In this connection the observations of Mr. T. Knowles, who described the chronic poisoning of 15 head of cattle and the acute and chronic poisoning of horses by ragwort are also well worthy of mention (*Record*, 1926, 618.) Mr. H. P. Standley's paper on the poisoning of five horses by ragwort is also of interest (*Vet. Journ.*, 1924, 35).

Yours faithfully,
G. W. Clough.

Royal Veterinary College,
London.
February 22nd, 1930.

"Melanotic Tumours Wanted."

To the Editor of the Veterinary Record.

Sir,—I observe in your issue of February 22nd, page 180, a letter from Professor Linton with the above heading. The collection of morbid specimens which I left at the Royal Veterinary College in 1927 contained portions of 78 such tumours, fixed in formalin and preserved in alcohol, from horses, cattle, sheep, dogs, and cats. As stated in the letter which appeared in the *Veterinary Record* of November 30th last, page 1070, the great bulk of the collection was destroyed by Professor Hare, but in view of the rarity of certain of these melanomata it is to be hoped that some of them are still in existence.

Yours faithfully,
J. McFadyean.

Hæmorrhage in Animals.

To the Editor of the Veterinary Record.

Sir,—I was interested to read the cases described by Mr. W. A. Campbell under the above heading in your

issue of the 15th, and although it would appear probable that nothing would have saved these animals, I am responding to his invitation to discuss this subject. As regards adrenalin, I prefer to give it intravenously in these cases, but what I have found to be far superior to it, is the preparation known as Hemoplastin, and made by Messrs. Parke, Davis & Co. This should be given in doses of five to ten c.c., intravenously. In cases of uterine hæmorrhage—particularly that observed sometimes in mares after foaling—I have used it, and in conjunction have given a deep muscular injection of Ergotin (Parke, Davis, & Co.). The results have been distinctly encouraging, and I should like to know if any others have tried this combination.

In connection with the intravenous injection of adrenalin, I should also like to know if any brother practitioner has tried this, in bad cases of milk fever—in addition, of course, to the routine udder inflation. Although rather digressing from the subject under discussion, my experiences so far with calcium gluconate have been frankly disappointing, and I have not saved one cow with its use—udder inflation, of course, has not been neglected. I must say, however, in strict fairness to this new treatment, that I very much doubt if any treatment would have saved the cows on which it has been tried, and I am beginning to wonder if those cases of milk fever which we meet, and which refuse to respond to all the known forms of treatment, may not be due to some other cause, and are not cases of milk fever at all; kidney disease, for example, being the trouble. I believe I am correct in stating that women with Bright's disease often succumb after delivery, and exhibit coma. May not the same condition occur in cattle, and cause them to show symptoms usually associated with milk fever?

Yours faithfully,
J. F. D. Tutt, M.R.C.V.S.

1 St. Cross Road,
Winchester.
February 21st, 1930.

Dr. R. Stewart Macdougall.*

To the Editor of The Veterinary Record.

Sir,—Dr. R. Stewart Macdougall having decided that he needs the whole of his time for the pursuit of the various investigations he has undertaken, is gradually relinquishing his teaching appointments. He has held that at this College to the last, but proposes to retire from the Chair of Biology at the end of the current Session.

A number of former members of his class have expressed the desire to bestow upon him some small token of their affection and esteem, and I have been asked to make public their intention in order that other former students and colleagues may have an opportunity to join in the movement. This I gladly do, because I am certain that everyone who has been associated with Dr. Macdougall will wish to share in the testimony.

To the end that the list of subscribers should be long, rather than that the total sum of subscriptions should be large, it has been decided that the amount of each individual subscription be limited to five shillings.

The Secretary of the College (Mr. A. C. Doull) will be glad to receive and acknowledge donations.

I am, Yours, etc.,
O. Charnock Bradley.

Royal (Dick) Veterinary College,
Edinburgh.
February 17th, 1930.

[* Owing to pressure on our space, this letter, received for insertion in last week's issue, unavoidably was held over.—Ed.]

The Editor acknowledges the receipt of the following:—Communications from Dr. G. W. Clough (London), Capt. T. M. Doyle (Weybridge), Dr. F. C. Minett (London), and Mr. E. L. Taylor (Weybridge).

Diseases of Animals Acts, 1894 to 1927.

SUMMARY OF RETURNS.

Period.	Anthrax.		Foot-and-Mouth Disease.		Glanders (including Farcy).§†		Parasitic Mange.§		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks confirmed.	Animals attacked.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 1 to 15 Feb., 1930...	27	27	—	—	—	—	19	33	50	124	24
Corresponding period in—											
1929 ...	15	15	7	97	—	—	22	44	51	63	44
1928 ...	27	28	17	1,896	—	—	21	44	51	69	30
1927 ...	19	22	5	403	—	—	26	44	39	66	26
Total 1 Jan. to 15 Feb.,1930	70	74	—	—	—	—	61	96	183	329	120
Corresponding period in—											
1929 ...	63	73	15	993	—	—	64	121	209	159	70
1928 ...	77	85	70	6,316	—	—	79	144	190	213	104
1927 ...	65	94	17	1,405	—	—	85	151	186	149	58

Note.—The figures for the current year are approximate only.

* Includes 8 outbreaks confirmed in 1929 but not notified to Ministry until 1930.

† Including outbreaks in recently imported animals.

§ Excluding outbreaks in Army Horses.